INTEL ROADMAP: Must-Have Specs & Tech Info For All Hardcore Upgraders

Plus: How To Protect Your Wireless Network

MAXIMUM PC

MAY 2003

MINIMUM BS

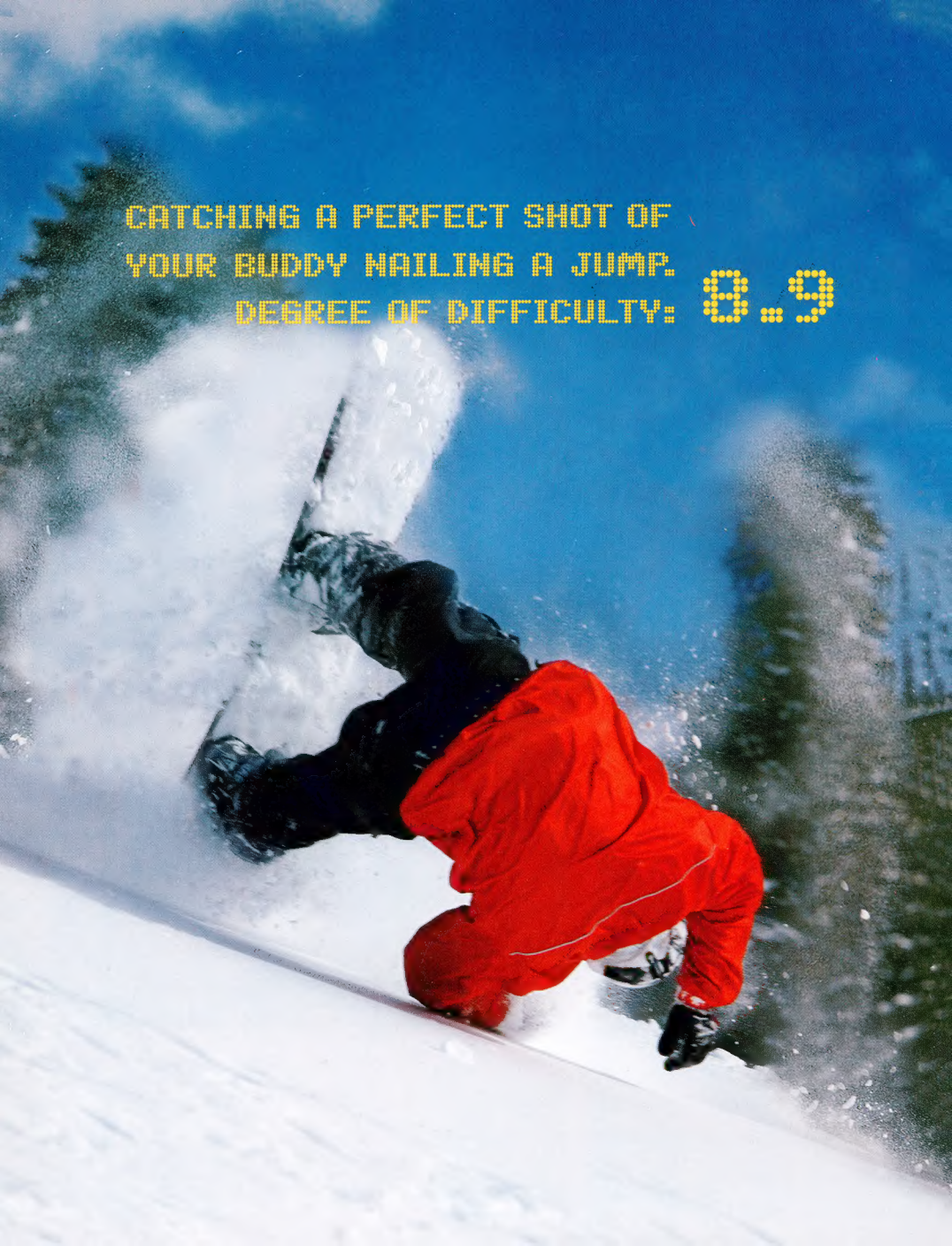
30-TIP PLAN FOR A PERFECT PC

- Eliminate System Bloat!
- Speed Up Performance!
- Increase Reliability & MORE!

Make Your Computer Maximum PC-Caliber, *GUARANTEED*

PLUS:

- 21 Essential Case-Modding Accessories
- PCI Express: How It Will Replace Your AGP & PCI slots
- WD's New 10,000rpm Hard Drive, Brutally Tested


CATCHING A PERFECT SHOT OF
YOUR BUDDY NAILING A JUMP.
DEGREE OF DIFFICULTY: 8.9

PRINTING IT AT THE LODGE
TO IMPRESS YOUR FRIENDS.
DEGREE OF DIFFICULTY: 8.6

The i70 Portable Printer with Bubble Jet Direct.

Now, even fresh off the slopes you can print gorgeous photos. Just plug your Canon digital camera* or computer into the i70 and you can easily print anything, anywhere.** Like borderless photos at up to 4800 x 1200 color dpi.† And, with print speeds of up to 13 ppm black and up to 9 ppm color, the only thing you sacrifice is size.†† The i70 Portable Printer. Your friends will be very impressed. To find out more, visit www.usa.canon.com/consumer or call us at 1-800-OK-CANON.

Canon KNOW HOW™

Camera and optional portable kit must be purchased separately. Output simulated. Specifications subject to change without notice. Photographs ©2003 Gil Smith. *For a listing of compatible Canon digital cameras and camcorders featuring Bubble Jet Direct technology, visit www.usa.canon.com/consumer/bubblejetdirect. **Printer requires AC Power or optional portable kit (LK-51) shown. †Will vary based on driver setting and paper type. ††Print speed high speed draft mode. Print speed will vary depending on system configuration, software, document complexity, print mode and page coverage.
©2003 Canon U.S.A., Inc. Canon is a registered trademark of Canon Inc. Canon Know How is a trademark of Canon U.S.A., Inc.

©2003 Memorex Products, Inc.

What you're looking for when you know what to look for.

The ultimate recordable DVD solution from the leader in digital media.

If you demand the best in DVD recording, we have three reasons why Memorex is exactly what you're looking for: performance, compatibility and trust. First of all, our internal DVD +RW/+R ReWritable Drive offers the industry's fastest recording rates, writing +RW and +R discs at 2.4x speed and reading DVD-ROM at 8x. What's more, our +RW formats allow you to edit your videos without having to rewrite the entire DVD—an enormous time-saver. Plus, our intuitive software makes the whole formatting process quick and easy. Secondly, our +RW and +R DVDs provide maximum compatibility. So whether you capture video, save photos or just transfer data, your DVDs will be compatible with most computers and home DVD players. Finally, Memorex has been one of the most trusted and popular selling brands of digital media for the past ten years. So if you're truly serious about digital video, log onto www.memorex.com. Because Memorex recordable DVD is everything you're looking for.

> High-performance recording

Our internal drive lets you write DVD +RW and DVD+R formats at 2.4x speed, read DVD-ROM at 8x speed and burn CDs at 12x (CD-R) and 10x (CD-RW).

> Maximum compatibility

Memorex +RW and +R formats offer unparalleled compatibility, so you can be confident that your DVD videos, work files and other data can be shared with friends, co-workers and family.

Memorex®

Is it live or is it Memorex?™

Release Notes

E-mail from the Front Lines

For almost nine years now, I've e-mailed, web-surfed, downloaded media, and posted on message boards practically every day of the week. I thought I had seen it all, and no "Internet phenomena" could ever again impress me. Well, I was wrong. In the span of just a few days recently, I witnessed what I'll call "new online highs and lows."

First the lows: A reader sent me an e-mail that included a tech question about our recent ATI versus nVidia benchmarking. I forwarded the letter to Will Smith, our technical editor, who responded directly to the reader. The reader then sent Will's response to a third party, who took it upon himself to post the response to an online message board—*without Will's permission*. But then the situation got even more despicable. After Will's first e-mail was posted, someone *fabricated* a second e-mail in Will's name—a very damaging e-mail that portrayed *Maximum PC* as sloppy and corrupt—and then forwarded it to someone else, who then posted it on the same message board.

Did anyone on the message board ever consider the *authenticity* of the outrageous statements supposedly emanating from Will's keyboard before calling for his head on a platter? No. In the world of online message boards, we tend to read all postings at face value—even private e-mails that have been posted without the original writer's permission or stamp of authenticity.

During this episode, I was blown away by the ease with which a malicious bastard was able to hurt the magazine's reputation with a forged message. I was also disturbed by people who thought it was perfectly reasonable to post relayed messages without the original letter-writer's permission. But kudos go to the forum moderator for investigating the matter, and letting his patrons know they had been duped. My take-away on this? In some cases, web content really is as untrustworthy as some would have us believe.

But this column does end on a high note. Lest anyone think that the Internet hasn't changed the world in a fascinating way, I'd like to report that on March 21, two days into the war in Iraq, I received via e-mail a case-modding contest entry—*from a soldier deployed in Kuwait*. The staff sergeant conceded he didn't really have a "home-made" rig, but explained his submission thus: "The system is the AMDWS—Air Missile Defense Workstation. I use it to detect and track Scud missiles so that I can warn any area at risk. It's SCSI and Unix-based, but that's all I can really tell you for security reasons." The soldier also sent some digital photos of himself and his comrades right on the front lines.

All this two days *after* the war had begun. It was the most vivid demonstration of the Internet's power to quickly and efficiently disseminate information that I had ever seen. I'm still impressed.

—JON PHILLIPS

If you're a deployed military man or woman reading this now, and would like to send Maximum PC *some news reports or digital images from the front lines, we'd be very interested in receiving them. History can be written by those who make it.*

Contents

05.03

Page 11

Page 21

Page 96

REGULARS

07 In/Out
Words from a Walmart PC proponent; a lesson in sensitivity for Thomas McDonald; and a glimpse at the glory days of Glitch.

10 Quick Start
PC previews, news, factoids... and what you need to know about PCI Express.

16 Head2Head
VIA's KT400 vs. nVidia's nForce2. Which chipset is more awesome? Find out here.

20 WatchDog
A tax app that spies on you; capacitors that bulge and ooze and sometimes explode; and are the days of a handy little gadget numbered?

54 Ask the Doctor
Windows isn't starting? Trace.log is gobbling up disk space? An incriminating web site is showing up on your toolbar? It's a good thing the Doctor is in.

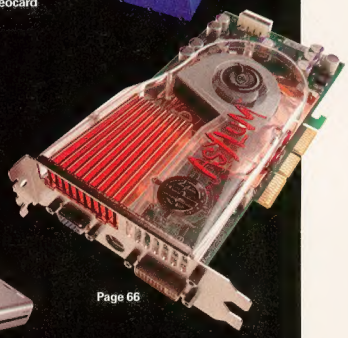
56 How To...
Make your wireless connection as safe and secure as possible.

96 Rig of the Month
Find out about one man's very unique means of safeguarding his PC.

REVIEWS

62 ABS Ultimate M6 desktop PC
63 D-Link DI-624 802.11g access point
63 Linksys WAP54G 802.11g access point
64 Monsoon PlanarMedia 14 2.1 speakers
65 Western Digital 360GD Raptor hard drive
66 BFG Asylum GeForce FX 5800 Ultra videocard
67 ATI Radeon 9800 Pro 128MB videocard
68 Antec LANBOY case
68 Wahoo Chili Pro case
69 MSI 52/24/52 CD burner
69 TDK indiDVD DVD burner
70 Instant Copy
70 Chemicus
71 Unreal II: The Awakening

Page 68



Page 66

Page 63

Hearing is Believing

revolution 7.1

High-Definition Surround Sound for your PC

Revolution 7.1™

- > PCI solution for high-definition surround up to 7.1
- > High-definition 24-bit/192kHz audio up to 7.1
- > Professional 24-bit/96kHz recording
- > Real-time stereo-to-surround conversion
- > Incredible 107dB SNR provides pristine audio

Sonica Theater™

- > Only USB solution for surround up to 7.1
- > High-fidelity 24-bit/96kHz audio output
- > Professional 24-bit/96kHz recording
- > Real-time stereo-to-surround conversion

TRUE 24 bit 192 kHz SUPERIOR SOUND

M-Audio's audio cards deliver immersive surround sound on your computer, rivaling that of the best movie theaters. Games, movies, and music—even your stereo CDs and MP3s—all sound more alive and intense with M-Audio surround solutions. Now you can enjoy amazing new cutting-edge audio standards like 7.1 surround sound and high-definition 24-bit/192kHz fidelity. Support for popular surround formats including Dolby Digital and DTS, as well as gaming standards like Sensaura, EAX, DirectSound and A3D, insures that you'll hear everything exactly the way it was intended.

Only one name is found in more studios and is used by more music professionals than any other: M-Audio. Now we've distilled all that experience into the most powerful, high-fidelity PC surround sound solutions available.

Get M-Audio. Get M-Powered.

available at COMPUSA WHERE AMERICA BUYS TECHNOLOGY.℠

M-AUDIO®

www.m-audio.com

MAXIMUM PC

EDITORIAL
Jon Phillips EDITOR-IN-CHIEF
Katherine Stevenson MANAGING EDITOR
Gordon Mah Ung SENIOR EDITOR
Will Smith TECHNICAL EDITOR
Logan Decker FEATURES EDITOR
Greg Vederman DISC EDITOR
Andrew Sanchez EDITOR EMERITUS

ART
Natalie Jeday ART DIRECTOR
Boni Uzilevsky ASSOCIATE ART DIRECTOR
Mark Madeo PHOTO EDITOR

CONTRIBUTING EDITORS
Tom Halfhill, Brian Lam, Thomas McDonald

PRODUCTION
Richard Lesovoy PRODUCTION DIRECTOR
Lawrence Briseno PRODUCTION COORDINATOR

ADVERTISING
Chris Coelho PUBLISHER
Bernard Lanigan EASTERN AD DIRECTOR 212.768.2966 EXT. 4001
Dave Lynn WESTERN AD DIRECTOR 949.360.4443
Stacey Levy NATIONAL SALES MANAGER 925.964.1205
Sharon Kiernan DIRECT SALES MANAGER 781.416.2018
Nate Hunt NATIONAL ACCT MANAGER 415.656.8536
Jose Urrutia ADVERTISING COORDINATOR 415.656.8313
Alison McCreery SENIOR MARKETING MANAGER

CIRCULATION
Tina K. Rodich GROUP CIRCULATION DIRECTOR
Angela Martinez NEW BUSINESS DIRECTOR
Mimi Hall NEWSSTAND MANAGER
Janet Amistoso DIRECT MARKETING SPECIALIST

BACK ISSUE REQUESTS
1.800.865.7240

REPRINTS PRINT AND DIGITAL
Reprint Management Services
Maggie French, 717.399.1900 x178
mfrench@reprintbuyer.com

How to contact us:
All subscription inquiries 800.274.3421 or maxcustserv@cdsfulfillment.com
Editorial staff input@maximumpc.com

future network usa
Media with Passion

FUTURE NETWORK USA
150 North Hill Dr. Brisbane, CA 94005
415.468.4684 www.futurenetworkusa.com

CHIEF EXECUTIVE Greg Ingham
PRESIDENT Jonathan Simpson-Bint
VICE PRESIDENT/CFO Tom Valentino
VP/EDITORIAL DIRECTOR Matt Firme
VICE PRESIDENT/CIRCULATION Holly Klingel
GENERAL COUNSEL Charles Schug
DIR. OF CENTRAL SERVICES Nancy Durlester

Future Network USA is aimed at people who have a passion. A passion for games. For business. For computers. Or for the Internet. These are passions we share. Our goal is to feed your passion with the greatest magazines, web sites, and CD-ROMs imaginable. We love to innovate, we love to have fun, and we have a cast-iron rule always to deliver spectacular editorial value. That means doing whatever it takes to give you the information you need. With any luck, we'll even make you smile sometimes.
Thanks for joining us.

Future Network USA is part of The Future Network plc. The Future Network plc serves the information needs of groups of people who share a passion. We aim to satisfy their passion by creating magazines and web sites that offer superb value for money, trustworthy information, multiple ways to save time and money, and are a pleasure to read or visit. This simple strategy has helped create one of the fastest-growing media companies in the world: we publish more than 100 magazines, 20 magazine web sites, and a number of web networks from offices in five countries. The company also licenses 42 magazines in 30 countries.
The Future Network is a public company quoted on the London Stock Exchange (symbol: FNET).

BATH LONDON MILAN MUNICH NEW YORK PARIS SAN FRANCISCO

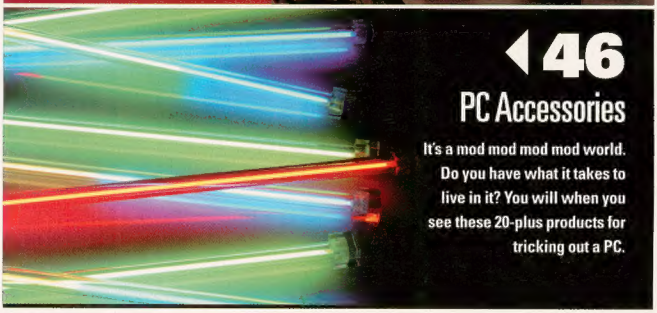
MAY FEATURES

24
30 Steps to PC Perfection

Our 30-tip upgrade program is like boot camp for a flabby PC. Eliminate system bloat. Speed up performance. Increase reliability. Make your rig *Maximum PC*-caliber—guaranteed.

38
Intel's Road Ahead

The 533MHz P4 system bus will soon be history. Ditto for RDRAM—it's dead. But what *will* be inside future Intel boxes? We reveal all.



46
PC Accessories

It's a mod mod mod mod world. Do you have what it takes to live in it? You will when you see these 20-plus products for tricking out a PC.

MAXIMUM PC (ISSN 1522-4279) is published monthly by Future Network USA, 150 North Hill Drive, Suite 40, Brisbane, CA 94005, USA. Periodical class postage paid in Brisbane, CA, and at additional mailing offices. Newsstand distribution is handled by Curtis Circulation Company. Basic subscription rates: one year (12 issues) US: $20; Canada: $26; Foreign: $42. Basic subscription rates "Deluxe" version (w/CD): one year (12 issues/12 CD-ROMs) U.S.: $30; Canada: $40; Foreign $56. US funds only. Canadian price includes postage and GST (GST#R128220688). Postmaster: Send changes of address to Maximum PC, P.O. Box 5159, Harlan, IA 51593-0659. Standard Mail enclosed in the following edition: B. Ride-Along enclosed in the following editions: C, C1, C2, C3, C4. Int'l Pub Mail# 0781029. For customer service, write Maximum PC, P.O. Box 51479, Boulder, CO 80328-1479; Maximum PC, 150 North Hill Drive, Brisbane, CA 94005. Future Network USA also publishes PC Gamer, PSM, MacAddict, and Official Xbox. Entire contents copyright 2003, Future Network USA. All rights reserved. Reproduction in whole or in part is prohibited. Imagine Media Inc. is not affiliated with the companies or products covered in Maximum PC. PRODUCED AND PRINTED IN THE UNITED STATES OF AMERICA.

MADE WITH NO LIMITS IN MIND
They're a total knockout - RADEON™ 9200 and RADEON™ 9600 visual processors are your best choices, whether you're upgrading your graphics card or buying a new PC. RADEON™ 9200 is the fastest graphics accelerator in its class, powering incredible 3D characters and effects. RADEON™ 9600 delivers killer performance, real-time cinematic effects at maximum quality settings, and full Microsoft® DirectX® 9 support so you can power the latest 3D games and applications. Whichever one you choose, you'll be getting performance that's, well, unbeatable.
RADEON™ 9200 and RADEON™ 9600 visual processing technologies are featured in boards built by ATI and other leading graphics board makers.
RADEON 9200 RADEON 9600
Copyright 2003, ATI Technologies Inc. All rights reserved. ATI and RADEON are trademarks and/or registered trademarks of ATI Technologies Inc. DirectX is a registered trademark of Microsoft Corporation in the United States and other countries. All other company and/or product names are trademarks and/or registered trademarks of their respective owners.
ATI
ATI.COM

In/Out

You write, we respond

LETTERS POLICY: ***MAXIMUM PC*** invites your thoughts and comments. Send them to **input@maximumpc.com**. Please include your full name, town, and telephone number, and limit your letter to 300 words. Letters may be edited for space and clarity. Due to the vast amount of e-mail we receive, we cannot personally respond to each letter.

GOOD ENOUGH FOR THOMAS THE TANK

I'm wondering why a "high-end gamers" magazine even bothered looking at a $200 Walmart system, much less reviewing it ["Ultimate Budget Upgrades," April 2003]. I bought one, and I haven't had any problems with it. I needed to upgrade two PCs (one for my boys, four and six years old, and one for my parents), and this was the easiest, most cost-effective way. Mind you, the extent of my boys' "gaming" involves Bob the Builder and Thomas the Tank, but the Walmart PC works like a dream for them.

I don't think you gave it a fair shake. It's a great system for someone on a really tight budget, and you can add in other stuff if you need to. Cripes, even with the price of a Walmart monitor, it's still only going to hit you for $350. It may not be a screaming speed demon for pro gamers, but for a start, it gets the job done, and it really had no business even being mentioned in a magazine written for pro gamers.

—BETTINA DELANEY

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: I beg to differ! *Maximum PC* isn't solely written for "pro gamers." PC gaming is indeed the most popular computer activity among our readers, but image editing, video production, MP3 collecting, and pure system building also rank high, among other "general consumer"-type activities. That's why we run so many non-gaming-oriented feature stories, reviews, and benchmarks.

We reviewed the Walmart PC precisely because we always focus so much attention on the ultra-high-end. For a change of pace, we wanted to show readers exactly what's being sold on the other end of the spectrum. And I think you and our editors are in agreement when it comes to the Walmart PC's merits. As we wrote in the review, "Let's look at the machine's bright side. It costs just $200 and takes care of all your office tasks for the price of a WinXP Pro license alone."

MINI-ITX: YOU JUST DON'T GET IT

Maximum PC and Walmart both missed the point. Your rant in April about how "wrong" the Walmart PC is wasn't entirely correct. While the VIA mini-ITX motherboards are not designed to be put in full desktop cases (what was Walmart thinking?), they are perfect for those of us pushing for an ultra-compact, silent PC for living rooms and cars, etc.

When we only want to do simple things like watch DVDs, play music, and have a PVR all in one system without any background noise coming from the system itself, these mini-ITX boards fit the bill perfectly. No one wants, or expects, gaming performance out of these boards. Trying to run a game on one is ludicrous. Check out **www.mini-itx.com** or **www.linitx.org**. You'll get an idea of the intended uses for these great little boards, and why their popularity is growing.

It's a downright shame that Walmart destroyed the true intent of these boards by putting them in such a messy system.

—PAUL ROBINSON

CONFUSED—BUT QUITE CANDID

In response to Thomas McDonald's comments in his review of the *Sims Online* in your March 2003 issue, I must protest the complete lack of sensitivity and discretion in his article. He described an individual working in a brothel who claimed to be a "girl," as possibly being "a confused young man in Spokane."

To make it clear, I was not confused in the least about what I was doing. It's just... well... after staring month after month at Thomas' picture in his Game Theory column, I just couldn't help myself. But he promised to keep the whole thing under wraps, and that hurt most of all (sniff).

BTW: I do not live in my mother's basement. I live over her garage. (I really do!)

—AARON GANCE

LET'S POINT FINGERS— BUT AT THE RIGHT PEOPLE

Maximum PC is an indispensable magazine

MAXIMUM PC READER SURVEY

Fill It Out, Mail It In, and Win!

We want to know what you think of ***Maximum PC*** magazine so we can do more of the stuff you like, less of the stuff you don't like, and add whatever you think is missing. Fill out the form below and send it to: **Maximum PC Reader Survey, 150 North Hill Drive, Brisbane, CA 94005**. *All* submissions received by May 31, 2003 will automatically be entered in a random drawing for **TDK's indiDVD 4X DVD Burner**. (With the indiDVD you can burn an entire disc in less than 14 minutes. That's 4.7GB of data, or 2 hours of high-quality MPEG2 video!) Photocopies of the survey will not be accepted.

Name_____

Phone number_____

E-mail_____

(This information will only be used to contact the drawing winner.)

1. How did you get this copy of *Maximum PC*?
a) ❑ **I'm a subscriber**
b) ❑ **I bought it on the newsstand**
c) ❑ **It was passed along to me by a friend**

2. Month to month the magazine delivers on the promises of its cover lines:
a) ❑ **agree**
b) ❑ **somewhat agree**
c) ❑ **disagree / Explain why not:** _____

3. How many people read your copy of *Maximum PC*? ___

4. What percentage of the magazine do you generally read?
a) ❑ **1 to 25%**
b) ❑ **25 to 50%**
c) ❑ **50 to 75%**
d) ❑ **75 to 100%**
e) ❑ **Every word**

5.Month to month, is *Maximum PC* worth the price?
a) ❑ **Yes, always.**
b) ❑ **Most of the time.**
c) ❑ **About half the time.**
d) ❑ **Not enough for me to buy it regularly.**

6. On a scale of 1 to 5 (1 being least important, 5 being most important), define the factors that compel you read *Maximum PC*:
___ **Attitude/personality of editorial staff**
___ **Quality of writing**
___ **Quality of page layout and design**
___ **Quality of photography**
___ **Technical depth of product coverage**
___ **Honesty/integrity/frankness of product coverage**
___ **Timeliness of product coverage**
___ **Magazine's help in making product purchasing decisions**
___ **Magazine's help in fixing technical problems**
___ **Brand recognition**
___ **Entertainment value**
___ **Cover lines/words**
___ **Cover subject**

7.Considering all the magazines you read, how would you rank *Maximum PC* on a 1 to 5 scale (1 being the least favorable rating) in terms of consumer value? ___

8. Considering all the magazines you read, where does *Maximum PC* fit on your list of favorites (1 being least favorite, 5 being most favorite)? ___

MAXIMUM PC READER SURVEY *(continued)*

9. What do you think of the overall design of the magazine?
a) ❑ It's cool, I like it.
b) ❑ I think the design is too busy.
c) ❑ I think the design is too clean.
d) ❑ It's just okay.

10. Do you find the tone of the writing to be:
a) ❑ The right mix of fun and informative
b) ❑ Too serious
c) ❑ Too silly

11. In regards to the organization of *Maximum PC*:
a) ❑ It's easy to find what I'm looking for.
b) ❑ I wish it were easier to find what I'm looking for.

12. On a scale of 1 to 5 (1 being the least favorable rating), which of the following are you interested in purchasing?
___ Last 12 issues in PDF format on a single disc
___ *Maximum PC*–branded stickers, posters, calendars, shirts, hats
___ Monthly electronic version of magazine that would replace print version
___ A less-expensive, disc-less newsstand option

13.How would you rate the disc content? Choose one.
a) ❑ Love it!
b) ❑ Appreciate it most of the time.
c) ❑ Occasionally find it useful.
d) ❑ Couldn't care less about it.

14. What do you think about the disc interface?
a) ❑ It's stunning and easy to use.
b) ❑ It could look better, but it's easy to use.
c) ❑ Could use an upgrade.

15. Do you want more or less of:

	More	Less	Same
a) In/Out	____	____	____
b) Quick Start	____	____	____
c) Watchdog	____	____	____
d) Head2Head	____	____	____
e) Features	____	____	____
f) Doctor	____	____	____
g) How To	____	____	____
h) In the Lab	____	____	____
i) Reviews	____	____	____
j) Rig of the Month	____	____	____

16. Would you like to see more or less "babe photos" in the magazine?
❑ More
❑ Less

17. Do you prefer:
a) ❑ Stories that tell you how to do something to your PC.
b) ❑ Stories that inform you about new PC technologies that may be coming in the next year.

No purchase is necessary to win. The odds of winning depend upon the number of entries received. Future Network USA cannot be responsible for lost, late, misdirected, or incomplete entries. The prize is nontransferable and no substitutions will be allowed. Winners will be determined by a random drawing of all valid entries and the decision of Future Network USA shall be final. This contest is open to residents of the United States only. Return of any prize or prize notification as undeliverable will result in disqualification and an alternate winner will be selected. Winners are responsible for paying any income taxes on the value of the prize received. Void in Rhode Island, Puerto Rico, and where prohibited by law.

for anyone serious about computing. But expertise in computing doesn't always translate into expertise in other areas. I refer to Thomas McDonald's remarks in the March 2003 issue, regarding *Sims Online* as a place where homosexuals prey on unsuspecting children.

Had McDonald done his research, he would have discovered that 98 percent of all child molesters are heterosexual in orientation. The attraction is the youth of the victim, not the gender. I do know something about this issue. I'm a single gay man raising an adopted son—a child who was abused by one heterosexual foster parent, and beaten by a second heterosexual foster parent. I did my research.

Now, if by "perverts," McDonald means anyone who preys on the young, regardless of orientation, then we are in full agreement; there's no question but that he is referring to a clinically defined paraphilia. But a casual reader might believe that McDonald's remarks imply a blanket condemnation of all gay people who access *Sims Online*.

While I respect McDonald's knowledge of computing and actually agree with many of his assessments of *Sims Online* and its darker underside, I resent the gratuitous condemnation of a whole class of people.

—DAN GOODMAN

CONTRIBUTING EDITOR THOMAS MCDONALD REPLIES: I appreciate Mr. Goodman's thoughtful letter, which gives me an opportunity to clear up a context problem I only noticed after the fact. The phrase "potential perverts" referred to child predators, not to all homosexuals. I do, however, stand by my concerns for the safety of this environment for children. I merely singled out gay chat areas because, as I mentioned, the number of them is significantly disproportionate to the percentage of the population that is, in fact, gay.

MORE GAMING COMPUTERS = MORE GAME TITLES

In response to Duane Jeffers' letter-to-the-editor published in the March 2003 issue of *Maximum PC*, Alienware would like to reply by saying, "Our souls are just fine and still with us, thank you."

Just because Best Buy introduces Alienware systems to a wider, more mainstream market, doesn't mean that we had to sell our souls to get there. The systems we offer in Best Buy are the exact same high-performance, custom-built systems that are offered on our web site and have won awards in *Maximum PC*. They are configure-to-order systems built with the same high-quality name-brand components, and they undergo the same rigorous 200-point quality control process and testing gauntlet as every other system we sell. We are still the same system builder that has always thrived on a simple principle: "Build it as if it were your own."

Hardcore PC gaming enthusiasts will recognize the fact that the PC gaming market will only benefit from Alienware being in Best Buy and other retailers. If it wasn't for companies like Alienware attempting to strengthen and broaden the PC gaming industry, all of the quality games would go to the consoles and we would all suffer. More PC gamers means more PC games being purchased, which in turn, leads to more incentive for the developers to develop newer and better PC games. Bottom line: We're all in it for the games. No PC games, no PC gamers.

—KEVIN WASIELEWSKI, HARDCORE GAMER AND ALIENWARE VP

THE RIGHT TO DISAGREE

I am a retired soldier, and I commend you for being honest and fair in light of this Patriotic PC flap. This is exactly why I swore an oath to the Constitution. While I do not agree with every issue, I try to hear the reasons and give a fair assessment. I've been spit on in airports when returning home for my service obligations, and my brother caught people trying to take the flag off our house. I'm not going to get all political here, but I just wish those who are all too willing to turn a deaf ear to a cause they don't personally believe in will give the next guy a fair shake, and show respect.

—DEOPRESSO LIBRE

OR WE COULD HIRE A GUY FROM CHIPPENDALE'S

I'm not interested in the e-mail address of Elizabeth, your "Speed Trials" model, but how about some hot single guy's? Yes, you do have female readers too!

—ALISON D. CAMPBELL

FORMER MAXIMUM PC TECH SUPPORT COLUMNIST DICK MATTHEWS REPLIES: You rang?

CRUDE LANGUAGE: THE LAST WORD

I am yet another reader who is getting tired of your crass and crude style, and your need to use profanity and teenage-mentality gutter language in your magazine. The only people who condone your style are those who themselves use profanity freely, and therefore see no harm in it. Is that your style? Looking to fit in and "be cool"? One dirty pig does not call another dirty pig dirty, does it?

I used to be impressed with your magazine, and looked forward to getting

each new issue, especially the CD with the software! However, I just can no longer justify putting up with, and tolerating, the filth. There are plenty of other, more professional quality magazines out there. Do you understand what professionalism is all about?

I shall be letting my subscription expire, and am starting one with *PC Plus*. For comparison, you can see how a magazine can be published without the trash. You need to grow up, but I'm sure that your magazine groupies, who sound like radical, "cool dude," teenagers, do not agree with me.

—DAN SMITH

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: I'm running Mr. Smith's letter this month not to mock or even disagree with him, but to show our more "language-liberal" readers exactly what some people find so ugly in *Maximum PC*. America is a land of many nations, and it's clear there's a big divide between the Nation of Potty Mouths and the Nation of Tidy Mouths. *Maximum PC* does err towards potty mouth territory, but we do so without apology—because that's who we are. Love it or leave it, we'll still love you in the morning.

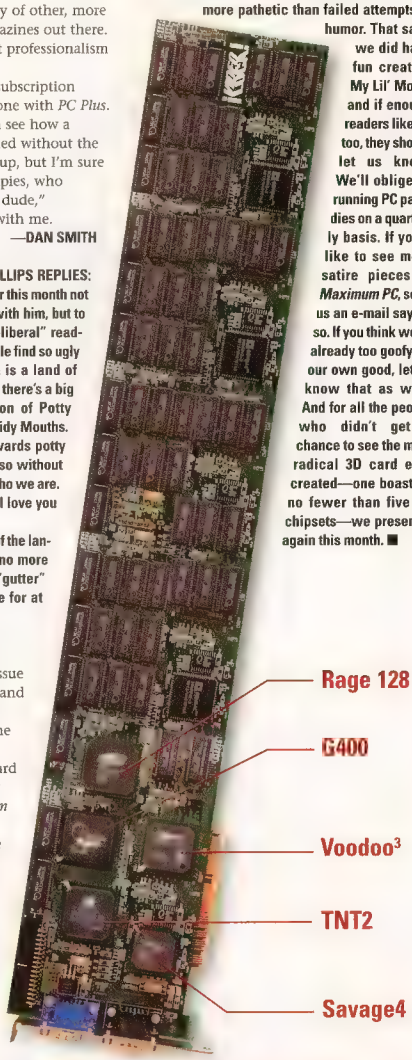
That's it, folks. The end of the language debate. You'll read no more arguments for or against "gutter" language in this magazine for at least one calendar year.

WHY DITCH GLITCH?

I was reading my April issue *Maximum PC* last night, and there was an interesting spoof of a fantasy toy: the platform-independent, do-it-yourself motherboard set. I started reminiscing about my older *Maximum PC* editions, and I remembered a back-page column called "Glitch." So I dug through my old editions, and lo and behold, there it was in the back of September 1999—the greatest videocard of all time, the Bitchin'fast! 3D2000 by VideoLoca! that benchmarked an incredible 425 BungholioMarks. I really miss these articles on the hardware that never was. Any chance of reviving Glitch even on a part-time basis?

—JOHN HAINS JR.

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: We cut Glitch because we felt its quality was slipping, and we didn't want to break the first rule of magazine satire: If you can't make it at least half-way funny, don't even try. Let's face it, there's nothing more pathetic than failed attempts at humor. That said, we did have fun creating My Lil' Mobo, and if enough readers liked it too, they should let us know. We'll oblige by running PC parodies on a quarterly basis. If you'd like to see more satire pieces in *Maximum PC*, send us an e-mail saying so. If you think we're already too goofy for our own good, let us know that as well. And for all the people who didn't get a chance to see the most radical 3D card ever created—one boasting no fewer than five 3D chipsets—we present it again this month. ■



CUT, COPY, PASTE

➤In our March issue we failed to note the web site of one our case modding photographers. Go to www.gruntville.com to see John "GruntmaN" Krump's full coverage of the case modding scene

COMING NEXT MONTH

IN THE PRESCRIPTION-STRENGTH JUNE ISSUE OF

MAXIMUM PC

Videocard Answers

Every annoying problem—*fixed*

Every control panel setting—*explained*

Every confusing term—*defined*

Every major videocard—*benchmarked*

Our most comprehensive videocard how-to guide ever!

(And if you have some videocard questions you'd like answered, please send them to input@maximumpc.com with the subject line "videocard answers.")

Also...

Third Annual Geek Quiz!

See if you can out-score the Maximum PC brainiacs! 60 hardcore questions. Can you answer them all?

PCI: Dead. AGP: Dead. Say Hello to PCI Express

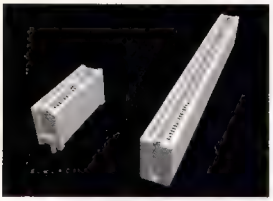
New bus protocol will completely reinvent your motherboard

PCI Express appears ready to make its debut—on schedule—in Intel's upcoming Grantsdale chipset later next year. Formerly code-named "3GIO" (for "third-generation I/O"), PCI Express will smash current bandwidth and power-supply bottlenecks, and send AGP, PCI, and PC Cards the way of the dodo. It's a good thing that PCI Express is ready to roll, because the Grantsdale chipset is being readied to support Tejas, a truly new core processor architecture from Intel that some are already nicknaming "Pentium 5" (see related story on page 44).

PCI Express—which is both a hardware interface standard and a transmission protocol—is expected to endure on motherboards for the next 10 years or more. The key to this longevity will be unprecedented scalability. That's right: Notebooks, desktops, workstations, and servers will *all* adopt the wondrously generous PCI Express. For this reason, the new I/O standard will be even more revolutionary than PCI was in 1992, when it began pushing out ISA.

Like other emerging PC technologies, the PCI Express architecture ditches a wide parallel bus (which requires complex and expensive electrical paths) in favor of a serial bus that can scale to higher speeds with far fewer wires. When configured in a standard desktop PC, PCI Express will use an "x1" interface—a 1-bit connector about an inch and a half long that can transfer roughly 500MB/s versus PCI's puny 133MB/s.

More bandwidth can be added by increasing the size of the connectors and using additional lanes. For example, PCI Express for Graphics is an extension of the basic spec, and requires that graphics cards use an x16 connector (and a 16-bit lane). After overhead is factored out, the new graphics bus should support about 4GB/s in each direction—roughly four times the speed of AGP 8x. Intel, one of the main proponents of the spec, says PCI Express for Graphics should offer enough capacity to bring us to the gamer's Holy Grail of photorealistic rendering, and beyond.



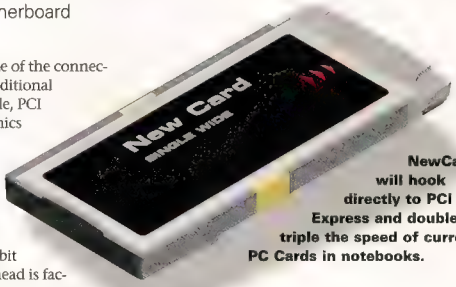
The 1-bit PCI Express connector (left) will replace the PCI slot (right), and provide almost four times the amount of bandwidth of the latter.

Bus traffic isn't the only problem PCI Express for Graphics will try to solve. One current limitation of the AGP spec is the amount of power that can be delivered to the AGP slot. Most desktop motherboards deliver just 25 watts of power to the slot, and this can be problematic. Even the original GeForce card had difficulties when motherboards couldn't deliver consistent, sustained power, and current high-performance cards like the Radeon 9700 Pro and GeForce FX 5800 Ultra require power from auxiliary connectors just to run.

The initial version of PCI Express for Graphics will supply 60 watts of power to the slot. PCI Express for Graphics cards will lean heavily on 12-volt power, so a redesign of power supplies may be necessary. Of course, more power means more heat, so manufacturers will have to cope with cooling 60-watt videocards. The heatsinks used in current videocards would probably turn into sparklers under such stress, so it's possible that ducting air directly from a PC's side panel may be necessary (at a minimum) to keep our *next*-next-gen graphics chips cool.

DARE TO COMPARE: MOBO BUS BANDWIDTH

ISA	16.7MB/s
PCI	133MB/s
AGP 1x	266MB/s
AGP 2x	532MB/s
AGP 4x	1.05GB/s
AGP 8x	2.1GB/s
PCI Express for Graphics	8GB/s



NewCard will hook directly to PCI Express and double or triple the speed of current PC Cards in notebooks.

So what will the new hardware look like? An initial proposal described a convenient, fully enclosed, hot-swappable module design that would ditch the bare-edge connector we're used to. The proposed modules would allow swapping parts without even opening up a PC case—and without even powering down. But that plan was scrapped, and desktop PCs will continue to employ the familiar edge-connector formfactor. Notebooks, however, will turn to a novel approach called NewCard.

NewCards will plug directly into the PCI Express bus, and are designed to replace the ubiquitous PC Cards currently in use. Because PC Cards can no longer be stacked in today's thinner notebooks, NewCard slots will be placed side by side. A single NewCard is about half the width of a PC Card. When used in the double-wide configuration, two NewCards will take up the same space as a single PC Card. The new notebook standard will also reduce power requirements (and give consumers a bit of a price break) because it does away with the need for a separate controller chip that PC Cards currently require.

While the modular system for desktops was passed up, system builders and Intel still believe NewCard could be used to add peripherals to desktop systems.

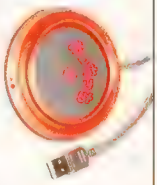
The Strange World of USB

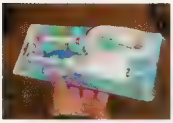
It's not just for mice and keyboards anymore

Although originally intended to be the connection standard for low- and medium-bandwidth peripherals, USB is now emerging as the preferred interface for comfort, hygiene, and beverage service solutions.

The idea of whirling blades protruding from your USB port might seem a little scary at first, but the blades of the FlyFan from Kensington ($20, www.kensington.com) are actually made of a soft, rubbery material. You can merrily stick a finger right into the props for a cool, buzzing-bee Foley effect.

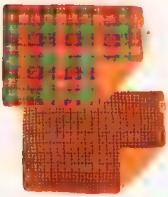
Naturally, the strangest USB-powered peripherals come from Japan. More specifically, from the Dreams Come True Company (www.dct-net.co.jp), where nothing is too unlikely, such as the USB Cupwarmer.





Again from our friends at Dreams Come True Company, we present the USB Toothbrush. Even the hand holding the package seems to regard this product with suspicion.

But wait, there's more! The USB Can Warmer guarantees that you'll never, ever have to endure an ice-cold can of Diet Coke ever again! (Wimps.)



Rounding out the parade of USB freakiness from the Dreams Come True Company is the 20x27.5-inch USB Knee Blanket—we are not making this up. The blankie keeps your knees toasty while your lap bakes beneath a piping-hot laptop housing a 3GHz CPU. Or maybe it's for the kitty.

Just in case you thought USB was having all the fun, here comes the FireDino from Charismac ($75, www.charismac.com). A "menacingly fast" four-port FireWire hub, the FireDino's eyes and mouth light up just like you'd expect them to. But don't put too many of them together. Things could get ugly.

EPSON

THAT WAS THEN.

THIS IS NOW.

NOW YOU CAN PRINT IMAGES AND TEXT DIRECTLY ONTO CDs AND DVDs.

For the first time, you can afford to customize disks any way you want - without the hassle of adhesive labels. Sound good? Well, it looks even better. To hear more, visit epson.com/960.

The Epson Stylus Photo 960 – Just $349.

Epson and Epson Stylus are trademarks/registered trademarks of Seiko Epson Corp. © 2003 Epson America, Inc.

World's First Blu-ray Recorder Lands in Japan

Sony's new optical medium stores 23GB

The botched introduction of affordable DVD recorders put egg on just about every manufacturer's face. But is it possible the manufacturers didn't bother hashing out a single standard because they were too consumed by Blu-ray, the *real* storage technology of tomorrow?

Blu-ray can write information fast enough to record high-definition TV content, and can store enough information on a single disc to make doing so practical. A number of next-gen Blu-ray devices have been prototyped over the last 18 months, but now the technology is real: This April, Sony released the very first consumer Blu-ray disc recorder in Japan.

The uncertain future of optical technology just got a little clearer.

Conventional DVD recorders use a 650-nanometer red laser that can record up to 4.7GB on a single disc. Blu-ray recorders, on the other hand, employ a 405-nanometer blue-violet laser. The much finer resolution of this laser allows up to 27GB of data on a single disc. "Fine" equals "more" in the world of data writes.

Sony's BDZ-S77 recorder is currently available only in Japan; don't expect to see any Blu-ray devices debut in the U.S. until 2004, at the earliest. But now that Blu-ray's gone from vaporware to hardware, we know exactly what to expect from the next wave in recordable technology. Here are some answers to basic Blu-ray questions:

Q: How much video will each 27GB disc store?
A: Sony's Blu-ray recorder has six different quality settings. The highest quality setting can record two hours of 1080i HDTV (at 24Mbps). The lowest quality setting can record up to 12 hours of standard television (at 4Mbps).

Q: Can Sony's Blu-ray recorder also write to legacy DVD-/+RW formats?
A: No, the BDZ-S77 will write only to Blu-ray discs. In theory, the recorder should be able to read DVD-Video, DVD-/+RW, CD, CD-R, and CD-RW formats. But its actual compatibility will rely on the firmware, and has yet to be confirmed.

Q: How much does it cost?
A: In Yankee dollars, the player costs a little less than $3,800. But, again, the model won't be available in the U.S.

Q: Why is the initial Blu-ray release a Japan-only product?
A: Because they're way ahead of us in terms of digital broadcast content.

Q: Is there anything else that's cool about it?
A: Yeah: It can record in Dolby Digital AC3, and has a built-in BS (broadcasting satellite) tuner. That's Sony's acronym, not ours.

Got a *yen* for a high-definition DVD recorder? Actually, you'll need 450,000 of them to buy the world's first Blu-ray disc recorder in Japan.

Blu-ray wasn't intended for mass distribution of commercial films; DVD will likely remain the standard for that in the foreseeable future. And, yes, we're back to cartridges.

Intel's Fabs Will Get Extreme

Extreme sports are child's play compared with the feats of skill that Intel's alpha geeks will perform in a few years. Intel claims it will be the first company to mass-produce microprocessors using extreme ultraviolet lithography (EUV), a revolutionary technology that will shrink circuit features by a factor of 10 or more. We could see processors with a billion transistors by the end of this decade.

Engineers everywhere have been working on EUV for years, and Intel isn't the only company rushing to perfect it. IBM—possibly in partnership with AMD—will race Intel to the finish line. But Intel, the world's largest chipmaker, has more at stake. Intel's aggressive schedule calls for EUV pilot production to begin in 2007–2008, followed by mass production in 2009.

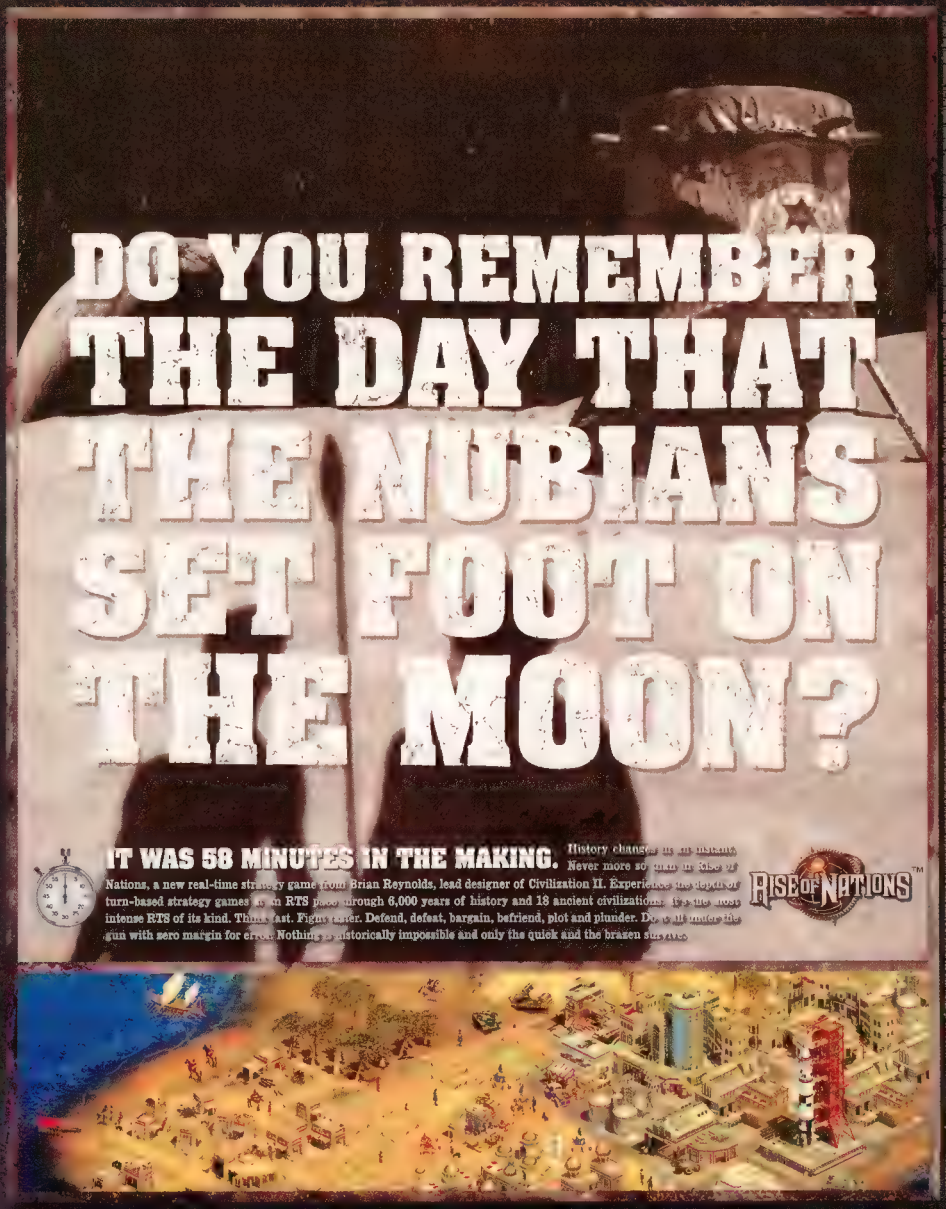
Lithography is part of the process that etches transistors, wires, insulating layers, and other circuit features on silicon chips. It works like a slide-show in reverse. Instead of projecting a small photographic image onto a large screen, the lithographic process projects a large photomask image of the circuit features onto a tiny area of a silicon wafer. Chemical baths etch the features into silicon, layer by layer.

EUV will close the "lithography gap" that threatens to make the famous Moore's law (double the circuit density every 18 months) as obsolete as the 486. Since 1997, circuit features have been shrinking faster than the wavelengths of the light rays that draw them. Today, PC processors have 130-nanometer (nm) features, even though the lithographic wavelength is 193nm. That's the lithography gap. To visualize this problem, imagine trying to draw a fine line on paper with a fat crayon. It seems impossible. In fact, the lithography gap would have stalled chip evolution at the Pentium II generation if not for clever engineering tricks that compensate for the resulting diffraction effects. But the tricks greatly increase the complexity of the photomasks, and engineers are running out of tricks.

EUV dramatically reduces lithography wavelengths. Within two years, the industry hopes to pare down the wavelength from today's 193nm to a slightly smaller 157nm. With EUV, the wavelength will plunge to 13nm. Suddenly, it will be possible to draw transistor gates and other circuit features 10 times smaller than ever before. That could translate into 10 times as many transistors on a same-size chip, or smaller chips that cut power consumption without sacrificing processing power.

Intel rarely announces new fabrication technology without delivering on time. With Moore's law named after one of its founders, Intel has even more reason than other companies to keep the law on the books.

Tom Halfhill was formerly a senior editor for Byte *magazine and an analyst for* Microprocessor Report. *He is now a technical writer/analyst in Silicon Valley.*


DO YOU REMEMBER
THE DAY THAT
THE NUBIANS
SET FOOT ON
THE MOON?
IT WAS 58 MINUTES IN THE MAKING.
History changes in an instant. Never more so than in Rise of Nations, a new real-time strategy game from Brian Reynolds, lead designer of Civilization II. Experience the depth of turn-based strategy games in an RTS played through 6,000 years of history and 18 ancient civilizations. It's the most intense RTS of its kind. Think fast. Fight faster. Defend, defeat, bargain, befriend, plot and plunder. Do it all under the gun with zero margin for error. Nothing is historically impossible and only the quick and the brazen survive.
RISE OF NATIONS™
MAKE HISTORY
TEEN
T
Blood and Gore
Violence
ESRB
BIG HUGE GAMES
Microsoft game studios
POWERED BY gamespy
www.riseofnations.com

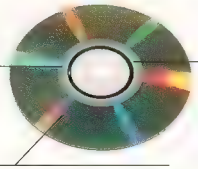
ODC Introduces the CDR-ROM

Does an extra letter make it any better?

No, it's not a typo. CDR-ROM is a hybrid media technology that would facilitate discs with pre-written, fixed content (just like old-school CD-ROMs), plus extra space for writing new content, a la CD-R. Although the format has existed on paper for years, the California-based Optical Disc Corporation is the first manufacturer to create a disc that could not only be "stamped" in the traditional mastering process, but also burned by conventional CD burners.

We can think of a lot of interesting applications for the technology—adding updates and patches to application CDs, for example. But one potential scheme has us worried. Optical Disc Corporation is pushing the CDR-ROM as an anti-piracy product, and the idea of an application disc that will work only with the PC on which it was originally installed isn't comforting.

Still, CDR-ROM is the only thing that could make us finally look forward to receiving those ubiquitous AOL discs.



ROM Area: This is the pre-recorded portion, positioned at the beginning of the CDR-ROM. Remember that compact discs are read from the center outward.

TOC: There's actually a tiny writeable area at the beginning of the CDR-ROM disc. That's where the disc's table of contents is kept—it can be added to just like any multisession CD-R.

Recordable Area: You get to record your own data in any portion not consumed by ROM data—just as long as you don't exceed 700MB.

Formfactor Watch

BIG THINGS GET LITTLE...

Sharp's Actius notebook—a mere 0.54 inches thick at its narrowest point—has dimensions that would make a supermodel jealous. The Actius MM10 weighs just 2.1 lbs., has built-in Wi-Fi, a Transmeta 1GHz Crusoe TM5800 proc, and a 10.4-inch screen. In order to better show off its trim dimensions, the Actius comes with the Sharp Connection Cradle, a docking station that holds the MM10 balanced on its edge and allows you to simultaneously recharge your laptop while using its internal hard drive as an external drive for your desktop PC.

SMALL THINGS GET SMALLER...

SanDisk Corporation is introducing miniSD, a miniature version of the flash memory standard that's designed to fit more comfortably into today's tweezer-size cell phones and ultra-mini handhelds. Up to 256MB cards will ship this year, and an adaptor is available so the new cards can be used in standard SD slots.

AND LITTLE THINGS GET BIG...

By reversing the polarity of the shrink-ray used on the miniSD card, SanDisk was also able to grow CompactFlash to a staggering 4GB capacity. Rumor has it that 6GB CF cards may not be far down the road.

Too Small for Comfort

Last month, I got to spend more time using my palms for fun than I have since I was a teenager. My Pocket PC gaming feature in the April issue marked my first protracted foray through the thicket of tiny little games for people who are terrified at the prospect of being alone on a long trip with merely their own thoughts to occupy the time. I really, truly don't need to game so badly that a swarm of 1-centimeter-tall soldiers in *Age of Empires* for Pocket PC is even remotely appealing to me. But part of my job is to judge things on their own merits, and certainly a nascent genre like Pocket PC gaming deserves to be looked at for what it achieves or fails to achieve within its format. Much of what I played was good, clever, and effective. I can see it appealing to a lot of people. But a great swath of last month's research in miniature gaming was for me an exercise in torture.

Each platform develops its own "language" of design. That's not to say all games don't share common traits, but it does mean that cross-platform conversion can be a sticky wicket. *Splinter Cell* for PC, for example, works quite well. But the game still plays better on Xbox.

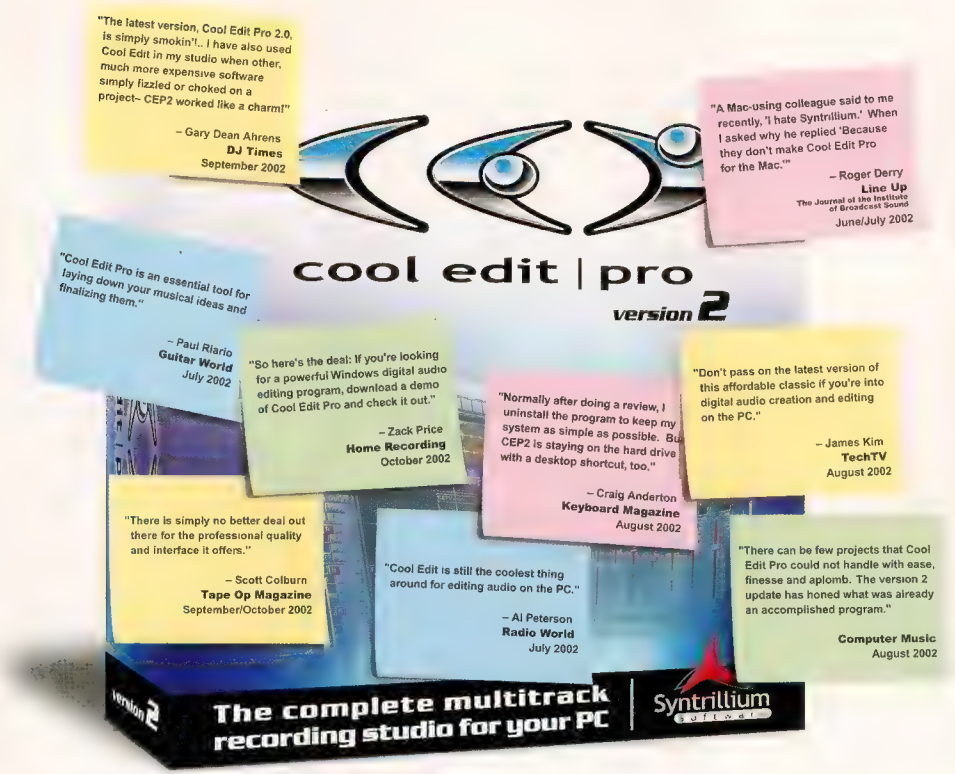
So it is with Pocket PC, only to a much greater degree. The PDA has a cluster of control features that are wholly unique: No other platform uses a touch screen, or is burdened with buttons designed for application use as opposed to quick responsiveness. Cramming a game made for use with a mouse, keyboard, or joystick into the PDA format is necessarily an exercise in compromise. Even when impressive—like the port *SimCity*—the results can be broken

The point of tiny games is, of course, their portability. Now you need never be without a three-year-old sub-munchkin version of *AoE*! But is anyone so desperate to play *AoE* that they can't just wait until they get home, so they can enjoy it on a nice CRT, using the familiar mouse control that won't cause hand cramps, and sitting in a comfy chair with a beer at hand, playing games the way they were intended to be played, by golly?!

If I need to game on the road—which I often do now that I'm a true-blue PPC junkie—I choose something easier to manage, something with lower expectations, like *Pocket Fritz, Hyperspace Delivery Boy*, or even *Darxide*, which makes good use of limited controls. Down-converting popular PC games for handheld use makes for an experience replete with sacrifices. If I'm going to play a game, I want it to be the real thing, not some dim-witted second cousin.

Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

Don't take our word for it.
Stick with what the pros say.



cool edit | pro

The reviews are in and the critics agree: Cool Edit Pro 2.0 is cooler than ever. It's packed with all the latest cutting-edge features for digital audio recording, editing, and mixing. Whether you're already a pro, or just getting started with PC-recording, Cool Edit Pro has the power, features, effects, formats, and flexibility to get the results you want. Even better, Cool Edit Pro users get free access to over 2,000 royalty-free loops of every kind of music imaginable from Loopology.com. You want to pack your PC with the best in audio? Try Cool Edit Pro.

Download your copy today from www.cooledit.com.

Syntrillium Software

P.O. Box 62255 | Phoenix, AZ 85082 USA | 1.888.941.7100 | tel: +1.480.941.4327 | fax: +1.480.941.8178 | sales@syntrillium.com | www.syntrillium.com
toll-free sales, USA and Canada

Head2Head

A showdown among natural PC competitors

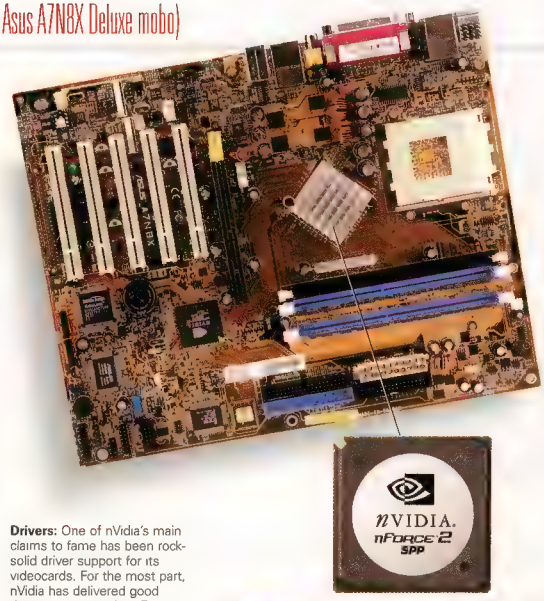
THIS MONTH: VIA Apollo KT400A vs. nVidia nForce2

When the nForce2 outperformed the Apollo KT400 earlier this year, we thought motherboard chipsets designed for single-channel memory were finally proved irrelevant. But VIA is back with an old trick—it has optimized its KT400 and added the famous "A" designator, which marks the chipset as a top performer in the VIA product line.

We've seen this move before. VIA neutralized the original nForce chipset when it revved the KT266 chipset to KT266A. But can VIA do it again? We got our hands on a VIA engineering sample mobo that uses the new KT400A and put it up against a production Asus A7N8X Deluxe motherboard.

—GORDON MAH UNG

NVIDIA NFORCE2 (in an Asus A7N8X Deluxe mobo)



Namesmanship: We've already heard of specsmanship. You know, Company A comes out with a 100MB/s ATA controller, so Company B trumps it with 133MB/s. It looks good on product packaging, and helps sell gear. But nVidia and VIA seem to have a battle of "namesmanship" going on. To wit: nVidia's best mobo chipset offers technologies called StreamThru, SoundStorm, IGP, SPP, MCP, DASP, DualNet, and TwinBank. *Whew.* When benchmarked with *TradeMark2003 SE*, we found nVidia gave us a 25 percent improvement over VIA's *TradeMark2003 SE* scores! **Winner: nForce2's marketing team**

Southbridge: With northbridge memory controller performance approaching parity these days, chipset battles are moving to the southbridge chips, and all the advanced technology that can be jammed into them. nVidia's MCP-T southie is one of the most advanced on the market, with integrated FireWire A, twin 10/100 Ethernet channels, ATA/133, USB 2.0, and APU (Audio Processing Unit), which can encode multichannel streams to Dolby Digital 5.1. Who needs PCI add-in cards or discrete controller chips with all this trick stuff wired right in? **Winner: nForce2**

Drivers: One of nVidia's main claims to fame has been rock-solid driver support for its videocards. For the most part, nVidia has delivered good driver support to the nForce platform, but there have been a few snags. Some motherboards feature different designs, so, yes, they've required different drivers. Remember when you used to get northbridge drivers from AMD and southbridge drivers from VIA? The situation is like that, except nVidia's the only party involved. **Winner: Tie**

The Logo: It's obvious that nVidia understands the strength of marketing and branding. The nForce2 logo is both recognizable and suggests maturity. The KT400A, conversely, looks rather dated to us. **Winner: nForce2**

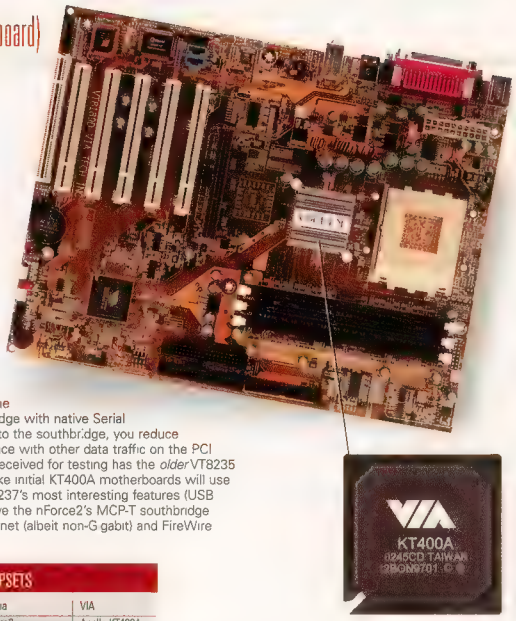
Performance: This is where the rubber hits the road. VIA showed us early numbers that indicated the KT400A was neck-and-neck with the nForce2, but our own tests show that the nForce2 still has an edge, albeit slight. In some tests, we were surprised by remarkably similar results, but in other tests, it was clear that either the nForce2 chipset or the nForce2 drivers are superior **Winner: nForce2 (by a hair)**

Design wins: It's an understatement to say that the original nForce had a tough time penetrating the motherboard market when the VIA KT266A and KT333 chipsets ruled the roost last year. AMD-land has pretty much been VIA-land. This is backed by Mercury Research, which reports that VIA has the leading market share in the Athlon XP mobo space. Nonetheless, the nForce2 looks to be more popular than the original nForce; no fewer than six different nForce motherboards are on the market, and more are coming. **Winner: KT400A**

THE SPECS: NFORCE2

AGP	4x/8x
Frontside bus	200MHz/333MHz/400MHz
Memory support	DDR200, DDR266, DDR333, DDR400 in both single and dual channel modes
North-south interconnect	800MB/s

KT400A (in a VIA reference board)



Namesmanship: VIA might be new to the namesmanship game (ah, sweet innocence), but it's no naive bumpkin. What were once merely "4-in-1 chipset drivers" are now "Hyperion 4-in-1 drivers." The newly optimized memory controller is called FastStream64 Technology, and other 400A features are called DualMax, CoolAmp, and V-Link. Still, nVidia has the edge in spitting out more high-tech-sounding feature names than just about any company save Intel. **Winner: the people at nVidia**

Southbridge: VIA says that with the VT8237, it beat everyone to the punch by introducing the first southbridge with native Serial ATA support. By bringing Serial ATA into the southbridge, you reduce latency issues and eliminate interference with other data traffic on the PCI bus. But unfortunately, the board we received for testing has the *older* VT8235 southbridge chip, and it doesn't look like initial KT400A motherboards will use the newer VT8237. We do like the VT8237's most interesting features (USB 2.0, SATA and Parallel ATA), but we give the nForce2's MCP-T southbridge a slight edge because of its dual-Ethernet (albeit non-Gigabit) and FireWire support. **Winner: nForce2**

Performance: VIA unleashed its top engineers to dig into the KT400 core. Their mission was to nip and tuck latencies, increase core speed by adding deeper buffers, and improve pre-fetch algorithms. The sum of this work is the KT400A, and the new chipset almost reaches parity with its target competitor, the nForce2. VIA says the two chips are equals; our numbers show the nForce2 to be just a tad faster. But just a tad, so if you have a compelling personal reason to go with VIA, you should do so without regret. We give the edge to nForce2, but the margin is so slim, we have to pay attention to VIA's argument that dual-channel DDR is overkill memory for the Athlon XP. **Winner: nForce2 (by a hair)**

Design wins: No contest—VIA already owns more than 50 percent of the AMD market. Plus, the KT400A, despite any performance losses to the nForce2, will likely be a hit because it is pin-compatible with the KT400. Any company already making a KT400 board can just drop in new north and south chips, throw a new sticker on the box, and start shipping. **Winner: KT400A**

DARE TO COMPARE: ATHLON XP CHIPSETS

Make	nVidia	VIA
Model	nForce2	Apollo KT400A
SYSmark2002 Overall	263	245
SYSmark2002 Content Creation	324	320
SYSmark2002 Office Productivity	213	187
Quake III Arena Demo 1 "Normal"	313 fps	305 fps
3DMark2001 SE Patched Default	15372	15526
3DMark2003 Default	4712	4666
3DMark2003 CPU	70.5	64.7
3DMark2003 CPU 2	11.3	9.6
SiSoft Sandra 2003 RAM INT	2469	2423
SiSoft Sandra 2003 RAM FLOAT	2374	2330

Bolding denotes the winner. But look at how many times each chipset's scores fell within the typical 2 to 5 percent margin of error for each test.

How we tested: For the nForce2, we used an Asus A7N8X Deluxe, and its most recent public BIOS and drivers. For the Apollo KT400A, we used Hyperion drivers provided by VIA. Both boards were outfitted with the same Ath on XP 3000+ CPU, a pair of 256MB DDR333 Corsair PC3200 DIMMs running at 333MHz speeds, a Western Digital WD1200JB, ATI Radeon 9700 Pro, and Catalyst 3.1 drivers. Windows XP Pro with Service Pack 1 was freshly installed for both tests.

Drivers: You could almost set your clock by the regularity of VIA's 4-in-1 driver updates. It seems that not a week or month goes by without an update from old faithful. Of course, some would say that so many updates aren't a good thing—that the company should have "gotten it right the first time." But for the most part, we've been happy with the 4-in-1 and its schedule. **Winner: Tie**

KT400A

The Logo: The KT400A logo might be a wee bit more "hip" if it didn't look like it came from a shareware clip art CD-ROM circa 1987. **Winner: nForce2**

THE SPECS: KT400A

AGP	4x/8x
Frontside bus	200MHz/333MHz/400MHz
Memory support	DDR200, DDR266, DDR333, DDR400 (single channel only)
North-south interconnect	533MB/s

THE UPSHOT

The nForce2 was clearly superior to the KT400, but the KT400A closes the gap to such a high degree, most people won't even bother arguing about which one reigns supreme. Amazingly, the KT400A edged the nForce2 in *3DMark2001 SE*, but then lost in *3DMark2003*. In *Quake III* at low res with the audio engine disabled, the nForce took top marks by roughly 3.5 percent.

We were also surprised that the KT400A was just a hair behind the nForce2 in the synthetic *SiSoft Sandra 2003* memory benchmark. The KT400A fell down the worse in the Office Productivity portion of *SYSmark2002*. This half of the benchmark features more disk I/O than the Content Creation half, which leads us to wonder if there's a problem with the KT400A's initial IDE drivers. We'll have to test the first production boards for KT400A to see if the benchmark performance can be replicated before we render a final opinion on the chipset. For now, it's looking very good for VIA.

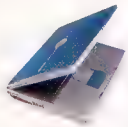
Great power. Blazing speed.
You'll have 3D villains surrendering in no time.

Select Dell desktops feature high performance Intel® Pentium® 4 Processors.

Click or call for our latest pricing and promotions.

Excellent for conquering strange new worlds or just escaping from this one. Dell offers a wide variety of desktops and notebooks that come fully equipped with the power, speed and high performance to take your PC experience to new levels. When you order from Dell, you'll get exactly what you want and need to make a PC that's uniquely yours. Since Dell uses high-quality, reliable technology, like Intel® Pentium® 4 Processors with awesome performance for gaming, music, digital photos, and beyond, you know you're getting a high-quality, reliable PC. And, as always, it comes backed by award-winning service and support available 24/7, 365 days a year. Best of all, when you order direct, you get the right PC at the right price. So go online or call today. We'll show you how easy it is to score a great PC.

Dell | Home Notebooks

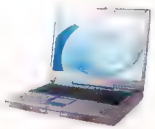


NEW Inspiron™ 5100 Notebook

Perfect Balance of Performance and Price
- Intel® Pentium® 4 Processor at 2.80GHz
- 15" Super XGA+ TFT Display
- 384MB DDR PC2100 SDRAM
- 30GB* Ultra ATA Hard Drive
- 24x CD-RW/DVD Combo Drive with Roxio's Easy CD Creator®
- 16MB DDR ATI® MOBILITY™ RADEON™ 7500 AGP 4x Graphics
- Integrated Stereo Sound
- 94WHr Li-Ion Battery (12 cell)
- Internal Modem and NIC Included
- Microsoft® Windows® XP Professional
- WordPerfect® Productivity Pack with Quicken® New User Edition

$1849 or as low as **$56**/mo*
E-VALUE Code: 16875-D80418m

Make this your perfect PC:
- 512MB DDR PC2100 SDRAM, add $50
- 40GB* Ultra ATA Hard Drive, add $79
- Dell Backpack, add $79

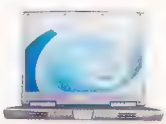


NEW Inspiron™ 8500 Notebook

Ultimate Multimedia Performance
- Mobile Intel® Pentium® 4 Processor-M at 2.20GHz
- 15.4" Wide Aspect UltraSharp™ SXGA+ TFT Display
- 512MB DDR PC2100 SDRAM
- 40GB* Ultra ATA Hard Drive
- 24x CD-RW/DVD Combo Drive with Roxio's Easy CD Creator®
- 32MB ATI® MOBILITY™ RADEON™ 9000 AGP 4x Graphics
- Integrated Stereo Sound
- 72WHr Li-Ion Battery with ExpressCharge™ Technology (9 cell)
- Internal Modem and NIC Included
- Microsoft® Windows® XP Professional
- WordPerfect® Productivity Pack with Quicken® New User Edition

$2149 or as low as **$65**/mo*
E-VALUE Code: 16875-D80421m

Make this your perfect PC:
- 60GB* Ultra ATA Hard Drive, add $130
- 64MB DDR NVIDIA® GeForce4™ 4200 Go AGP 4x Graphics, add $99
- Dell Nylon Case, add $49



NEW Inspiron™ 8500 Notebook

Ultimate Multimedia Performance
- Mobile Intel® Pentium® 4 Processor-M at 2.40GHz
- 15.4" Wide-Aspect UltraSharp™ UXGA TFT Display
- 512MB DDR PC2100 SDRAM
- 60GB* Ultra ATA Hard Drive
- 24x CD-RW/DVD Combo Drive with Roxio's Easy CD Creator®
- 64MB DDR NVIDIA® GeForce4™ 4200 Go AGP 4x Graphics
- Integrated Stereo Sound
- 72WHr Li-Ion Battery with ExpressCharge™ Technology (9 cell)
- Internal Modem and NIC Included
- Microsoft® Windows® XP Professional
- WordPerfect® Productivity Pack with Quicken® New User Edition

$2479 or as low as **$75**/mo*
E-VALUE Code: 16875-D80424m

Make this your perfect PC:
- 2nd 48WHr Li-Ion Polymer Battery, add $129
- External Harman Kardon HK-395 Speakers with Subwoofer, add $59
- 64MB Dell USB Memory Key, add $59

Dimension™ 4550 Desktop

Superior Performance, Smart Value

- Intel® Pentium® 4 Processor at 2.53GHz with 533MHz Front Side Bus and 512K L2 Cache
- 512MB DDR SDRAM at 333MHz
- 120GB* Ultra ATA/100 Hard Drive (7200 RPM)
- 19" (18.0" viewable, .24dp) M992 Monitor
- NEW 128MB DDR ATI® RADEON™ 9700 TX Graphics Card with TV-Out and DVI
- 16x DVD-ROM Drive
- NEW Sound Blaster® Audigy2™ Sound Card with DVD Audio
- Harman Kardon HK-395 Speakers with Subwoofer
- 56K* PCI Telephony Modem
- Integrated Intel® PRO 10/100 Ethernet
- Microsoft® Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition

$1499 or as low as **$45**/mo*
E-VALUE Code. 16875-D50414m

Make this your perfect PC:

- NEW 128MB DDR ATI® RADEON™ 9700 Pro Graphics Card with TV-Out and DVI, add $180
- 21" (19.9" viewable, .24AG) P1130 FD Trinitron® Monitor, add $420
- 1GB DDR SDRAM at 266MHz, add $200
- NEW 200GB* Ultra ATA/100 Hard Drive (7200 RPM) with DataBurst Cache™, add $210

Dimension™ 8250 Desktop

Cutting Edge Technology

- Intel® Pentium® 4 Processor at 2.66GHz with 533MHz Front Side Bus and 512K L2 Cache
- 512MB PC1066 RDRAM
- 60GB* Ultra ATA/100 Hard Drive (7200 RPM)
- 19" (18.0" viewable, .24dp) M992 Monitor
- NEW 128MB DDR ATI® RADEON™ 9700 Pro Graphics Card with TV-Out and DVI
- 16x DVD-ROM Drive
- NEW Sound Blaster® Audigy2™ Sound Card with DVD Audio
- Harman Kardon HK-395 Speakers with Subwoofer
- 56K* Telephony Modem
- Integrated Intel® PRO 10/100 Ethernet
- Microsoft® Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition

$2059 or as low as **$62**/mo*
E-VALUE Code: 16875-D50420m

Make this your perfect PC:

- Altec Lansing® ADA745 4.1 Surround Sound Speakers with Subwoofer add $80
- 1GB PC1066 RDRAM, add $460
- NEW 120GB* Ultra ATA/100 Hard Drive (7200 RPM), add $90
- NEW 48x/24x/48x CD-RW Drive with Roxio's Easy CD Creator® (2nd Bay), add $79

Dimension™ 8250 Desktop

Cutting Edge Technology

- Intel® Pentium® 4 Processor at 3.06GHz with HT Technology
- 512MB PC1066 RDRAM
- NEW 200GB* Ultra ATA/100 Hard Drive (7200 RPM) with DataBurst™ Cache
- 19" (18.0" viewable, .24dp) M992 Monitor
- NEW 128MB DDR ATI™ RADEON™ 9700 Pro Graphics Card with TV-Out and DVI
- 16x DVD-ROM Drive
- NEW 48x/24x/48x CD-RW Drive with Roxio's Easy CD Creator® (2nd bay)
- NEW Sound Blaster® Audigy2™ Sound Card with DVD Audio
- Altec Lansing® ADA745 4.1 Surround Sound Speakers with Subwoofer
- 56K* PCI Telephony Modem
- Integrated Intel® PRO 10/100 Ethernet
- Microsoft® Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition

$2999 or as low as **$90**/mo*
E-VALUE Code. 16875-D50429m

Make this your perfect PC:

- 1GB PC1066 RDRAM, add $460
- 21" (19.9" viewable, .24AG) P1130 FD Trinitron® Monitor, add $420
- Altec Lansing® THX Certified ADA995 Surround Sound 5.1 Speaker System with Dell™ Enhanced Multimedia Keyboard, add $160
- NEW 4x DVD+RW/+R* Drive with CD-RW including Roxio's Easy CD Creator® and Sonic® MyDVD™ (2nd Bay), add $130

Standard Features

Each DELL system shown has a number of standard features, including:

- Dell™ Picture Studio Image Expert Standard Edition
- Dell™ Jukebox Powered by MUSICMATCH®
- 6 Months of America Online® Membership*
- Dimension Desktops
  1-Year Limited Warranty* 1 Year At Home Service Offering* Keyboard and Mouse and Floppy Drive (Dimension 4550)
- Inspiron Notebooks
  1 Year Limited Warranty* 1 Year Mail In Service Offering

Software & Peripherals

- Dell All In One Printer A940 (Prints, Scans, and Copies) $139
- Dell Axim® X5, $749
- Kodak EasyShare™ LS443 Digital Camera $399
- Gravis Gamepad Pro $15
- Microsoft® Side Winder Force Feedback Wheel $99
- Belkin® Home Office 350VA UPS Surge, $49
- Rise Of Nations $49
- Master of Orion 3 $49

Service & Support

Upgrade from Standard Warranty and Service Offering to:
3-Year Limited Warranty,* 3-Year At-Home Service Offering*:

- Dimension 4550, 8250, $159
- Inspiron 5100, $179
- Inspiron 8500, $269

Accidents Happen!
Protect yourself by adding CompleteCare™ Accidental Damage Protection* to your Service and Warranty Package

- Dimension 1 Year $39
- Dimension 3 Year $99
- Inspiron 1-Year $79
- Inspiron 3 Year $149

The perfect PC at the perfect price. Easy as DELL™

Click www.dell4me.com/maxpc Call 1-800-624-6113

Dell recommends Microsoft® Windows® XP Professional for Mobile Computing

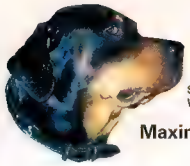
*America Online: New members only. Must register for AOL within 30 days of invoice. To avoid paying monthly membership fees, cancel during the 6-month promotional period. Even during promo period telephone access charges on your phone bill (call your phone co. for details) and surcharges for premium services and 800# access may apply, including in AK. Availability may be limited, especially during peak times. For new, 18+ U.S. members with major credit card or checking account only. Limited time offer. America On line, AOL, the Triangle logo and Buddy List® are registered service marks of America Online, Inc.

Pricing/Availability: Prices, specifications, availability and terms of offers may change without notice. Taxes and shipping charges are extra, and vary. Valid for U.S. Dell Home Systems Co. new purchases only. Dell cannot be responsible for errors in typography or photography. **Limited Warranties:** You can get a copy of our limited warranties and guarantees by writing Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 78682. To purchase warranty only or for information on other service options, please call 1-800-915-3355 or visit dell4me.com/termsandconditions. **Service:** At-Home service provided via third party contract with customer. Technician will be dispatched, if necessary, following phone-based troubleshooting. Availability varies. Other conditions apply. **Hard Drives:** For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. **56K Modem:** Download speeds are limited to 53Kbps. Upload speeds are less (about 30Kbps). Speeds can vary by line condition and modem manufacturer. Analog phone line and service required. **DVD+RW Drives:** Discs burned with this drive may not be compatible with some existing drives and players using DVD+R media; provides maximum compatibility. **PURCHASE PLAN. Dell Preferred Account:** Offered by C.I. Bank to qualified U.S. residents with approved credit. Taxes and shipping charges are extra and vary. **CompleteCare.** CompleteCare service excludes theft, loss, and damage due to fire or intentional damage. CompleteCare is currently not available in all states. Not available for Dell home Sales customers in CA, FL or NY. Not available for Employee Purchase Program customers, Government, Health Care and Relationship/Faculty, Staff and Students in CA or FL. May not be available to all customers. For complete details, visit http://www.dell.com/us/en/gen/services/service_service_contracts.htm. **Trademark/Copyright Notices:** Intel, Intel Inside, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation. ©2003 Dell Computer Corporation. All rights reserved.

VALUE™

Keep your E-VALUE CODE handy! It's the easiest way to find and build your perfect PC when you decide to order

WatchDog



Say hello to Dee, WatchDog of the Month.

Maximum PC takes a bite out of bad gear

THIS MONTH: The WatchDog goes after...

>Bad capacitors >Minds@Work >Apple >Intuit >Lexmark

Class-Action Lawsuit Alerts

The Machiavellian copy protection scheme that Intuit implemented in the latest version of *TurboTax* has landed the company in court. A Los Angeles attorney is suing Intuit, accusing the firm of fraud as well as unfair and deceptive trade practices. The flap stems from SafeCast, which automatically installs on a user's machine as part of *Turbo Tax*. On initial builds of the app, the copy protection couldn't be removed from the machine and data was written to an unused portion of the partition table. Users accused Intuit of stealing CPU cycles and RAM. Intuit subsequently apologized and added an online update that allows consumers to uninstall the copy protection. The suit, filed by Stanbury Fishelman, Inc. of Los Angeles, also alleges that *TurboTax* will run only on machines that have a DLL required by *Internet Explorer*. For more information on the suit, contact H. Scott Leviant of Stanbury Fishelman at hsleviant@stanfish.com.

In other class-action news, a suit has been filed against Lexmark over jamming problems in many of its top-loading printers including the Z11, Z12, Z13, Z22, Z23, Z25, Z31, Z32, Z33, Z35, Z42, Z45, Z45se, Z51, Z52, Z53, Z54, Z55, Z55se, Z65, Z65p, Z65n, X63, X75, X125, 1100 Color Jetprinter, 3200 Color Jetprinter, Optra Color 40, Optra Color 40n, Optra Color 45, and Optra color 45n (*whew*).

There are also several Kodak printers included in the suit, which alleges that Lexmark knew the printers were prone to jamming but did not issue a recall and concealed potential problems from the public. For details, visit www.sheller.com/lexmarkclassaction.html.

An unknown number of capacitors with a defective electrolytic formula may be lurking in tens of thousands of motherboards, PCs, game consoles, power supplies, and monitors—anywhere the components are used.

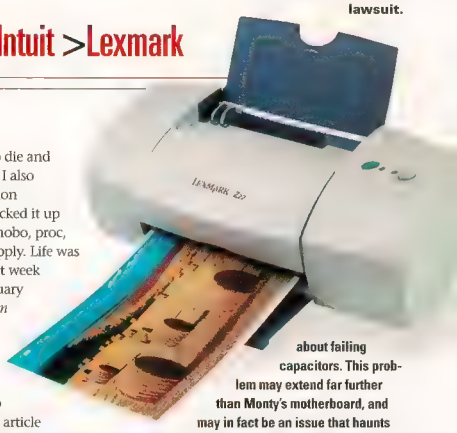
Holy Exploding Capacitors!

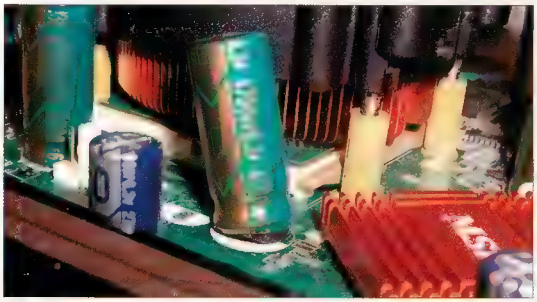
DEAR DOG: My Abit SA-6 mobo began randomly rebooting recently. After opening the case and looking at the motherboard, I realized that more than half the capacitors were leaking electrolyte. I tested the power supply thinking it was starting to die and found no problems. I also have surge suppression installed. Upset, I sucked it up and bought a new mobo, proc, RAM, and power supply. Life was good again, until last week when I got my February issue of *IEEE Spectrum* magazine. On page 16, I saw an interesting article titled, "Leaking Capacitors Muck Up Motherboards." The article describes massive failures with capacitors on motherboards (mostly Abit). It seems the electrolytic formula was stolen from one company and sold to another. Bottom line, the capacitors are substandard and fail prematurely. The article also says Abit will repair or replace any defective mobos. I sent an e-mail to Abit regarding this problem. As of today I have not heard back. You may want to share this with your readers.

— **MONTY JANAK**

THE DOG RESPONDS: Monty was one of several readers who wrote in this month about failing capacitors. This problem may extend far further than Monty's motherboard, and may in fact be an issue that haunts the PC and electronics industry for years to come. According to news reports, an unknown number of capacitors with a defective electrolytic formula may be lurking in tens of thousands of motherboards, PCs, game consoles, power supplies, and monitors—anywhere the components are used. The origin of the problem, according to trade publication *Passive Component Industry*, is a twisted tale of industrial espionage. In a nutshell, the secret formula for the electrolytic capacitor fluid was stolen from one company and used to make low-cost components. The spies didn't make off with the entire formula, though—thus the copied electrolytes

Many of Lexmark's top-loading printers are the subject of a recent lawsuit.





These are examples of capacitors that are beginning to fail from a bad batch of electrolyte.

are flawed. The capacitors reportedly fail after a year or two of use.

Carey Holzman, a system builder in Glendale, Arizona, was one of the first people who tried to bring attention to the problem. Holzman told the Dog he first discovered the problem after a customer brought in a system that would work with a GeForce3 but not a GeForce4 or GeForce2 MX. The customer used the GeForce3 card, but after a few months it completely died. Holzman then noticed the bad capacitors. Usually blown caps indicate a low-quality power supply, but Holzman has since seen dozens and dozens of failed motherboards and systems in his shop—everything from old Slot 1 boards to current-generation Socket 478 and Socket A systems. Holzman said that since he's gone public, he's heard from more than 70 people who have experienced similar problems. He suspects that the bad caps get overlooked because people don't check for them initially.

"It's so easy to see if you know what to look for," Holzman said. He recommends that you get a good flashlight, crack open your case, and take a close look at your caps. If they appear bulged at the bottom or have a bit of rust or tar-colored goo on them, they're likely leaking and about to fail. Images of blown capacitors can be seen on his site: www.careyholzman.com.

Is this a tempest in a teapot or a time bomb waiting to go off? The Dog wants to hear from you if you've had capacitor problems with your motherboard. You'll see updates on this issue as the Dog learns more.

Minds Not Working

DEAR DOG: I was thinking about buying a MindStor from Minds@Work to transfer files from my digital camera while I'm out taking pictures. It sounds like a great idea to use a hard drive to transfer digital pictures to instead of having to buy a lot of CompactFlash. My problem is that I can't reach anyone at the company, although the web site seems to function fine. There are a lot of units for sale, but I don't want one if the company's gone out of business.

— W. WONG

THE DOG RESPONDS: You should probably spend your cash elsewhere because it looks like Minds@Work is ready to be tagged and bagged. Although the web site was still functioning at press time, phone numbers at the company's headquarters have been disconnected. The Dog reached the former president of the company, Marc Ganouna, who said the company's fate was sealed by the events of the last two years. "We are basically a victim of the economy," Ganouna told the Dog. "Our second round of financing was expected after 9/11." With many of the Minds@Work investors located in NYC, the money just didn't come through and sales evaporated with the downturn. The company dragged on until this January when the final remaining employees were laid off. Ganouna said the assets were turned over to the creditors and the doors were shuttered.

Ganouna said he wasn't sure what the creditors would do with the company and its assets. Ganouna, who created the first Digital Wallet and subsequent MindStor, said Minds@Work pioneered the idea but was unable to compete with similar devices from overseas. The idea itself is great for serious digital photographers. Instead of buying a ton of flash memory, a single memory card could be periodically downloaded into a Walkman-size device holding a 10GB, or 30GB hard drive. Not everyone was happy, though. A perusal of digital photography forums such as Dpreview.com found some users complaining about quality-control issues with the units.

With Minds@Work dead it's unlikely consumers can obtain new firmware, replacement batteries, or repairs. The Dog recommends that unless you get it for such a great price that you can't say no, it's better to buy a different product. Woof. ■

Not all good ideas work out. Despite their utility, the Digital Wallet and its follow-up, the MindStor, tanked when the company went down.

"We are basically the victim of the economy. Our second round of financing of was expected after 9/11."

Got a bone to pick with a vendor? Been spiked by a fly-by-night operation? Sic The Dog on them by writing **watchdog@maximumpc.com**. The Dog promises 5to get to as many letters as possible, but only has four paws to work with.

SORT OF A RECALL ALERT

Apple Case Mods

If your new Power Mac G4 tower is too loud, you may want to take Apple up on a "free" upgrade designed to cut the acoustic signature. Apple began offering the exchange program after the howls of its users became as loud as the howls coming from the Power Mac G4 towers. It seems that some Apple users just can't take the noise from the systems. The exchange kit includes an Allen wrench, a replacement system fan, a lower-wattage power supply (from the stock 400 watt unit to a 360 watt unit), and a 23-page instruction booklet on how to swap out the fan and power supply. Those instructions should be followed closely: Apple accepts no responsibility if parts are fried in the process of performing the exchange. Users who are too timid to swap out the components on their own may take their G4s to a service center—however, they will be charged for the labor costs

The exchange program is only valid until June 30, 2003, and applies only to Macs with a mirrored drive door, not the QuickSilver version. More info is available at https://depot.info.apple.com/generic/.

100,000 COMPONENTS IN STOCK!

TigerDirect.com COMPONENT Headquarters

BUILD-IT-YOURSELF PARADISE!

CALL FOR OUR 100-PAGE COLOR CATALOG!

MOTHERBOARDS, PROCESSORS, CASES, DRIVES, KITS, BUNDLES, MORE!

YOU ORDER TODAY—WE SHIP TODAY!

PENTIUM 4 MOTHERBOARDS

SOYO P4x400 DRAGON ULTRA $159.99

S450-2125	Soyo P4x400 Dragon Ultra	$159.99

MORE PENTIUM 4 MOTHERBOARD DEALS

A458-1000	Abit BE7	$99.99
A458-1100	Abit IT7-MAX2	$169.99
A261-1010	Albatron PX845PEV Pro	$79.99
A261-1014	Albatron PX845PE Pro II	$129.99
A455-1025	Asus P4PE	$119.99
A455-1010	Asus P4T533C	$159.99
F451-1030	FIC VC19	$74.99
F451-1025	FIC VI-13	$84.99
G451-1025	Gigabyte 8PE667 Ultra	$129.99
G451-1030	Gigabyte 8INXP	$239.99
I69-2005	Intel 845PESVL	$119.99
I69-2010	Intel 845GE	$129.99
I69 2015	Intel 845PEBT2	$139.99
M452-1516	MSI 645E Max	$69.99
M457-1520	MSI 845PE Max L	$99.99
S451-2118	Shuttle AV40S	$59.99
S451-2130	Shuttle AV49N	$79.99
S450-2110	Soyo P4VDA	$79.99
S450-2128	Soyo P4I 845PE Lite	$119.99
P450-2200	XFX P4XEMVB	$84.99
P450-2220	XFX 845PE	$89.99

SOCKET A MOTHERBOARDS

SOYO KT400 DRAGON ULTRA PLATINUM $169.99

S460-2025	Soyo KT400 Dragon Ultra (Platinum)	$169.99
A458-2000	Abit NF7	$109.99
A458 2005	Abit NF7-S	$134.99
A458-2200	Abit AT7 MAX2	$179.99
A261-2100	Albatron KM266 PRO	$59.99
A261-2000	Albatron KX400+	$69.99
A455-2000	Asus A7V333	$99.99
A455-2020	Asus A7N8X	$119.99
A455-2030	Asus A7V8X	$129.99
F451-2010	FIC AT31	$59.99
F451-2025	FIC AU11	$99.99
G451-2005	Gigabyte 7VKMLS	$49.99
G451-2010	Gigabyte 7VAXP	$109.99
M452-2022	MSI KT4V-L	$89.99
M452-2025	MSI K7N2G-L	$129.99
S451-2020A	Shuttle AK32A	$59.99
S451-2031	Shuttle MK35N	$69.99
S451-2032	Shuttle AK38N	$79.99
S450-2005	Soyo K7VTA Pro	$79.99
S450-2016	Soyo K7V Dragon Plus	$99.99
S450-2026	Soyo KT400 Dragon Ultra (Black)	$119.99
P450-2005	XFX 361BS	$59.99
P450-2010	XFX KT33BV	$84.99
P450-2015	XFX KT400ALH	$89.99

LCD FLAT-PANEL MONITOR DEALS

FROM JUST $249.99*

M925-1500	PL566s 15" LCD	$249.99*
M925-1724	PL766s 17" LCD	$349.99*
M925-1800	PL866s 18" LCD	$429.99*

*All Prices After $50 Mail-In Rebate

VIDEO CARDS

PNY GeForce4 Ti4200 8X AGP $99.99

P56-2637	PNY GeForce4 Ti 4200 8X AGP 128MB	$99.99*

AGP nVidia VIDEO DEALS

P56-2601	PNY 32MB SDRAM AGP GeForce2 MX200	19.99*
P450-7202	XFX nVidia TnT2 M64 32MB AGP	$29.99
P450-7232	XFX GeForce4 MX440se 64MB SDRAM AGP	$29.99*
P450-7248	XFX GeForce4 Ti4200 128MB AGP AGP	$129.99*

ATi VIDEO DEALS

F451-7240	ATi Radeon 7000 64MB AGP by FIC	$49.99
A177-3020	ATi Radeon 9000 PRO 128MB AGP	$99.99
A177-3021	ATI Radeon 9500 PRO 128MB AGP	$199.99
F451-9700	ATI Radeon 9700 Pro 128MB 8X AGP by FIC	$299.99
A177-3022	AT Radeon 9700 PRO 128MB 8X AGP	$299.99
A177-3024	ATI All-In-Wonder 9700 Pro 128MB AGP	$399.99

PCI VIDEO DEALS

GeForce4 MX440se 64MB $69.99

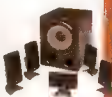
P450-7109	XFX GeForce4 MX440se 64MB PCI w/ TV Out	$69.99
P450-7102	Pine SiS 305 32MB PCI	$24.99
P56-2631	PNY GeForce4 MX440se 64MB DDR PCI	$59.99

CREATIVE LABS AUDIO

Creative Labs SB Audigy 2 Platinum $169.99

C44-3006	Creative Labs SB Audigy 2 Platinum	$169.99
C44-3002	Creative Labs SB 16 (CT4816)	$19.99
C44-5020	Creative Labs Sound Blaster Live! 5.1	$39.99
C44-3007	Creative Labs SB Audigy 2	$129.99

SPEAKER SYSTEMS



C375-3001	CA-3001 3-Piece/10WT (Black)	$19.99
C375-3000	CA-3000 3-Piece/10WT (White	$19.99
C375-3090	CA-3090 3-Piece/22WT (Black)	$29.99
C375-3080	CA-3080 3-Piece/22WT (White)	$29.99
C375-4400	CA-4400 5-Piece/50WT (Black	$39.99
C375-4100	CA-4100 5-Piece/50WT (White)	$39.99
C375-3560	CA-3560 5-Piece/20WT (White)	$49.99
C375-3550	CA-3550 3 Piece/40WT (Black)	$49.99
C375-5150	CA-5150 6 Piece/100WT (Black)	$59.99*

SOCKET A BAREBONES

F451-3210	FIC AN19E Sea th DDR Socket A Blue Barebone	$129.99
F451-3230	FIC AT31 DDR Socket A Blue Barebone w/ Audio	$99.99
S450-3050	Soyo K7VEM Pro Socket A SDRAM Barebone	$89.99
S450-3005	Soyo K7ADA Socket A DDR Barebone	89.99*
S450-3020	Soyo Dragon Socket A Barebone	$99.99*
S451-3030	Shuttle SS40 Socket A A l Aluminum Barebone	$199.99
S451-3040	Shuttle SN41G2 Socket A Al Aluminum BB	$299.99*

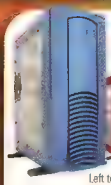
SOCKET 478 BAREBONES

SYX-P4-03013	Barebone kit w/Cear side & Light	$199.99
C450-3000	Casedge 300SF Socket 478 Barebone	$109.99
C450-3020	Casedge Twister Desktop P4 Barebone	$169.99
S451-3035	Shuttle SS51G Socket 478 A l Aluminum Barebone w/ Heat Pipe	$279.99
F451-3200	FIC VC19C P4 Blue Barebone w/ Audio	$119.99
S450-3060	Soyo P4SD 645 Dragon Lite Socket 478 Barebone w/ 300W PS	$119.99

Media XPCs

Z450-3110	Cisnet Media XPC w/P4 2.4GHz/512MB/80GB	$1249.99

PC CASES



FROM $69.99

Choose Your Style and Color
Left to Right: Dragon, Matrix, Scorpio and Winner
Please see our web site for more colors

DRG-C-BL-AL	Chieftec Dragon Black Aluminum Clear Side w/USB/1394/Side Fan (No Power Suppy)	$99.99
MTX-C-RD-AL	Chieftec Matrix Red Aluminum Clear Side w/USB/1394/Side Fan (No Power Suppy)	$99.99
SCP-S	Chieftec Scorpio Series Silver (No P/S)	$69.99
WNR-BK	Chieftec Winner Black Case w/Side Fan (No Power Supply)	$69.99
C255-1000	Chieftec Black Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1002	Chieftec Silver Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1004	Chieftec Blue Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1006	Chieftec Red Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1008	Chieftec Purple Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1010	Chieftec Green Mid Tower Case w/Clear Side (No Power Supply)	$69.99
C255-1012	Chieftec Yellow Mid Tower Case w/Clear Side (No Power Supply)	$69.99

Antec PC CASES WITH POWER SUPPLIES

A453-1056—Antec SX-1040B II Black Case (10-Bay) w/400 PS . . . $109.99

$109.99 BEST SELLERS!

A450-3000	Grey ATX Tower Case w/ 300 Watt PS	$29.99
B452-1018	Just4PC Mid Tower Case w/ 350W	$34.99
B452-1020	Just4PC Mid Tower Case w/ 350W Bk	$39.99
A453-1040	Antec Mini Tower Case Metallic Bronze 300W PS	$69.99
A453-1052	Antec SX-630II Beige Case w/300W	$79.99
A453-2000	Antec PlusView1000 w/Clear Side (No PS)	$89.99
A453-1054	Antec SX-635II Case w/350W PS	$99.99
A453-1056	Antec SX-1040B II Bk Case w/400W PS	$109.99
A453-1038	Antec 660AMG Mini-Case w/330W PS	$114.99
A453-1042	Antec Plus 1080AMG Case w/430W PS	$149.99
K450-3000	Kingwin KT-436 Aluminum Case w/ 3 Clear Side Panels Black	$159.99
K450-3005	Kingwin KT-436 Aluminum Case w/3 Clear Side Panels Blue	$159.99
K144-1000 P	Koolance Beige PC2-601 Liquid Cooled Case No PS	$189.99
K144-1002 P	Koolance Black PC2-601 Liquid Cooled Case NO PS	$199.99
K144-1006 P	Koolance Blue PC2-601BLW Liquid Cooled Case No PS	$209.99
T925-2000	Xaser II Tower PC Case w/ Clear Side Panel (Black)	$119.99
T925-2002	Xaser II Tower PC Case w/Clear Side Panel (Silver)	$139.99

POWER SUPPLIES

TC1-3105 A	Standard 300W ATX	$29.99
B452-3100	JPC 350W ATX P4 & AMD Ready	$24.99
C455-3115	ATX 350W AMD & P4 Approved	$34.99
B452-3105	JPC 350W Dual FanMetallic Orange	$59.99
B452-3110	JPC 450W Dual FanMetallic Blue	$79.99
B452 3115	JPC 550W Dual Fan Metallic Blue	$129.99
A453-1068	Antec SmartBlue 350W ATX	$59.99
A453-1060	Antec SL400 400W ATX	$74.99
A453-1024	Antec TruePower 430W ATX	$89.99
A453-1032	Antec TrueBlue 480W ATX	$109.99
A453-1026	Antec TruePower 550W ATX	$119.99

888-237-6698 LOWEST PRICES ANYWHERE!

CALL FOR EXPERT ADVICE! HUGE ONLINE SELECTION!

FAST SHIPPING!

WE ARE THE LEADER IN COMPONENT SALES!

TigerDirect.com

WORLD'S LARGEST INVENTORY OF NEW AND EXTREME GAMING COMPONENTS AND ACCESSORIES!

LOWEST PRICES EVERY DAY!

SHOP ONLINE AT: www.tigerdirect.com/m

OR CALL US AT 888-237-6698

OUR KNOWLEDGEABLE STAFF CAN OFFER EXPERT ADVICE!

While Visiting Our Website, Be Sure To Register For Our E-Mail Price Updates!

PNY MEMORY

Premium-Quality PNY Memory At ALL-TIME LOW PRICES!...

For Online Price Updates... www.tigerdirect.com

THE ULTIMATE UPGRADE!

128MB PC133 SDRAM $17.99

256MB PC133 SDRAM $29.99

PC 100 SDRAM

P56-1516	PNY **128MB** PC100 SDRAM (168-Pin D MM)	$19.99*
P56-1526	PNY **256MB** PC100 SDRAM (168-Pin D MM)	$39.99*

PC 133 SDRAM

P56-1517	PNY **128MB** PC133 SDRAM (168-Pin D MM)	$17.99*
P56-1519	PNY **256MB** PC133 SDRAM (168-Pin D MM)	$29.99*
P56-1521	PNY **512MB** PC133 SDRAM (168-Pin D MM)	$49.99*

DDR MEMORY! PC 2100

P56-1900	PNY **128MB** PC2100 ***DDR RAM*** (266MHz)	$17.99*
P56-1902	PNY **256MB** PC2100 ***DDR RAM*** (266MHz)	$29.99*
P56-1904	PNY **512MB** PC2100 ***DDR RAM*** (266MHz)	$49.99*

*All Prices After Mail-In Rebate

OVERCLOCKING MEMORY!

We Also Carry Low Latency And Dual Channel TwinX DDR!

For Online Price Updates... www.tigerdirect.com

XMS

C13-1912	Corsair XMS Extreme Memory 256MB PC2700 DDR 333MHz	$69.99
C13-1914	Corsair XMS Extreme Memory 512MB PC2700 DDR 333MHz	$129.99
C13 4902	Corsair XMS Extreme Memory 256MB PC3200 DDR 400MHz	$89.99
C13-4904	Corsair XMS Extreme Memory 512MB PC3200 DDR 400MHz	$159.99
C13-4912	Corsair XMS Extreme Memory 256MB PC3500 DDR 433MHz	$99.99
C13-4914	Corsair XMS Extreme Memory 512MB PC3500 DDR 433MHz	$199.99

CASE ACCESSORIES AND LIGHTING KITS

TC1-3500 B	CU Case Thumb Screws Black 10 Pack	$6.99
TC1 3500 C	CU Case Thumb Screws Chrome 10 Pack	$6.99
A453-1028	Antec ATX Power Supply Tester	$14.99
K450-8000	Kingwin KF-20 HDD Rack IDE ATA/100	$11.99
K450-8000 I	Kingwin KF-20 HDD Rack Insert	$8.99
K450-8010	Kingwin KF-23 HDD ALuminum Rack IDE	$29.99
K450-8010 I	Kingwin KF-23 HDD ALuminum Rack Insert	$21.99
P261-1000 B	PcToys Blue Cold Cathode Light Kit	$19.99
P261-1000 G	PcToys Green Cold Cathode Light Kit	$19.99
P261-1000 R	PcToys Red Cold Cathode Light Kit	$19.99
P261-1006	PcToys UV (Black Light) Cold Cathode Kit	$24.99
P261-9000	PcToys Black Light Accent Paint (Choose Color)	$14.99

CABLES

TC1-9115	CD-ROM / CD-RW D gital Audio Cable	$1.99
TC1-10000 F	Universal Floppy 24" Cable	$1.99
TC1 10000A B	Universal EIDE 18" 3DE Cable	$1.99
TC1-13900	Dual Drive ATA HD Cable, 2 Drives 18"	$9.99
P261-1801	PcToys 18" Floppy Cable (Choose Color)	$8.99
P261-1800	PcToys 18" ATA Round Cable (Choose Color)	$12.99
P261-2400	PcToys 24" ATA Round Cable (Choose Color)	$14.99
TC1-9110	USB to USB Data Transfer Cable	$34.99

NETWORKING

E83-1000	Genoca 10/100 PCI Ethernet Adapter	$5.99
TC1-9003	10/100 NIC Card PCI w/ Wake on LAN	$7.99
TC3S-1004	Farallon NetLine USB to Ethernet Adapter	$9.99
69-6005	Intel Gigabyte Pro/1000 MT Adapter	$49.99

PROCESSORS

Celeron & P4. Fans Sold Separately

CP2-CI-1700N	Intel Celeron 17GHz (400MHz)	$59.99
CP2-CI-2000N	Intel Celeron 2.0GHz (400MHz)	$79.99
CP2-P4-2400AN	Intel Pentium 4 2.4GHz (400MHz)	$189.99
CP2-P4-2400BN	Intel Pentium 4 2.4GHz (533MHz)	$189.99
CP2-P4-2500BN	Intel Pentium 4 2.5GHz (533MHz)	$219.99
CP2-P4-2800BN	Intel Pentium 4 2.8GHz (533MHz)	$279.99
CP2-P4-3000BN	Intel Pentium 4 3.0GHz (533MHz)	$419.99*

*Supports HyperTheading

AMD Athlon CPUs Fans Sold Separately

CP2-XP1800TB	Athlon XP 1800+ CPU Thoroughbred	$79.99
CP2 XP2000	Athlon XP 2000+ CPU Pa orn no	$89.99
CP2-XP2100	Athlon XP 2100+ CPU Pa orn no	$99.99
CP2-XP2200TB	Athlon XP 2200+ CPU Thoroughbred	$114.99
CP2-XP2400TB	Athlon XP 2400+ CPU Thoroughbred	$149.99
CP2-XP2500JB	Athlon XP 2500+ CPU Barton Core	$179.99
CP2-XP2600JB	Athlon XP 2600+ CPU Barton Core	$249.99
CP2-XP2800JB	Athlon XP 2800+ CPU Barton Core	$399.99

Actual Athlon XP/MP processor speeds 1700+/1.47GHz, 1800+/1.53GHz, 2000+/1 66GHz, 2100+/1 73GHz, 2200+/1.8GHz, 2400+/2.0GHz 2500+/1 83, 2600+/2 13GHz and 2800+/2 25

HARD DRIVES

Featuring Premium Seagate Maxtor Western Digital

THD-204AA2	Seagate 20 4GB/7200	$59.99
THD-40A3	Seagate 40 0GB/5400	$69.99
THD-60AA2	Seagate 60 0GB/7200	$89.99
THD-80AA2	Seagate 80 0GB/7200	$99.99
THD-1200JB	WD 120.0GB/7200/8MB	$159.99
THD-2000JB	WD 200.0GB/7200/8MB	$269.99

KEYBOARDS AND MICE

A450-1006	Windows 2000 Keyboard	$7.99
C26-1032 P	Compaq Standard Keyboard-105 Keys (Black)	$7.99
A450-1013	MultiFunction w/125 Keys	$12.99
A450-1012B	Multifunction Black w/123 Keys	$14.99
V18-1012	ViewSon c ViewMate Office	$29.99
TC1-2002 3	PS/2 3-Button Mouse	$3.99
TC1-2003 X	Compaq PS/2 Scroll Mouse	$5.99
K24-1805	HP USB Optical Mouse	$9.99
A450-2011	Optical Scrolling Mouse USB & PS/2	$14.99
TC1-2005	Microsoft Wheel Mouse Optical OEM	$14.99
TC1-2006	Microsoft IntelliMouse Optical OEM	$19.99
C255 2000X	Cheetec Wireless Keyboard and Mouse (Choose Color)	$34.99

MODEMS

H261-1000	HIRO 56K Data Fax, V 92, PnP, PCI	$12.99
H261-1004	HIRO Intel 56K Data Fax, V 90,PnP,Voice,PCI	$14.99
U13-4082	USR v 92 56K Int. Data/Fax Modem	$24.99*
U13 4084	USR v.92 56K Ext. Data/Fax Modem	$74.99

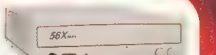
UPGRADE CARDS

A190-5514	ActionTec Internal PCI 1394 FireWire Card	$29.99
A450-5100	I/O Flex 32-bit Single PCI Parallel Card	$19.99
A450-5010	NEC USB 2.0 PCI Card- 5 Port	$29.99
A450-5015	I/O Flex 2 Ports USB 2.0 PCMCIA	$39.99
A450-5025	I/O Flex 2 Port Firewire/1394 PCMCIA	$34.99
P261-2000	PcToys Front I/O Box w/Firewire, USB	$19.99
TC1 6500	Adapter 80 Pin SCSI to 68 Pin SCSI	$9.99
A91-2000	Adaptec 29160 SCSI V160 LVD PCI Adapter	$329.99
A91-2002	Adaptec SCSI Card 39320-R Kit	$349.99
A91-2004	Adaptec SCSI Card 39320D-R Kit	$399.99
A450-5010	USB 2.0 PCI Card	$16.99
A450 5020	1394 Firewire PCI Card	$24.99
A450-5030	Bayone USB & Smart Card Reader	$34.99
H261-4000	HIRO 8 in 1 Internal Card Reader 5.25"	$49.99

TOOL KITS

B20-1502	Belkin 20 Piece PC Too Kit	$16.99
B20-1503	Belkin 36 Piece PC Tool Kit	$24.99
B20-1504	Belkin 55 Piece PC Tool Kit	$29.99
B20-1505	Belkin 65 Piece PC Tool Kit	$49.99

OPTICAL DRIVES



CD-ROM, CD-RW And DVD

A450-4027	Element 56x CD-ROM Drive	$24.99
A451-4126	ARTEC 16x DVD ROM W/W/N DVD	$41.99
A450 2021 P	CD RW 52x24x52x Internal EIDE W/Nero 5.5	$49.99
TC1-4320	LG GCC-4320B 32x10x40 CD-RW w/16x DVD-Rom Combo Drive	$99.99
B203 1058	BMI Toshiba 2x DVD-R/RW Internal EIDE Recorder	$193.99
B203-1046	Pioneer Black 2x DVD-R/RW Recorder	$219.99

Floppy Disk Drives

TC1-6001	1.44 MB Floppy Disk Drive	$17.99
TC1-6000 BL	1.44MB Floppy Disk Dr ve (Black)	$19.99

BEST GAMER SYSTEM VALUES—ANYWHERE!

Systemax COMPUTERS

These PCs ship with a solid s.de panel. Clear side panel and neon light kit are sold separately. To purchase light kit and clear side panel ask for item # SYX-086350 (Blue), or SYX-086351 (Green) $39.99 each

Mon tor sold separately

AMD ATHLON XP 2800+

- 512MB DDR PC333
- 80GB 7200RPM Hard Drive
- 48xCD-RW and DVD ROM
- GF4 MX440 64MB w/TV Out
- Onboard AC '97 3D Audio
- 56K Modem² and 10/100 LAN
- Black Mid-Tower Case w/300 Watt PS
- Microsoft® Windows® XP Pro
- One Year On-Site Parts And Labor Warranty

$999.99

AMD Athlon XP

SYX-XP-036028 AMD Athon XP 2800+ $999.99*

*After $100 Mail-in Rebate

INTEL PENTIUM 4 3.0GHz

- Intel P4 3.06GHz with Hyper-Thread ng Technology
- 512MB 333MHz DDR
- 80GB 7200RPM Hard Drive
- 48x12x48 CD-RW and16X DVD
- Via P4B400 Motherboard
- GF4 TI 4200 8X AGP 128MB w/TV Out
- Onboard 6-Channel Audio
- 56K Modem² and 10/100 NIC
- Onboard Firewire
- Black Mid-Tower ATX Case 300 Watt PS
- Microsoft® Windows® XP Professional
- One Year On-Site Parts And Labor Warranty

$1399.99

SYX P4 036024 Intel Pentium 4 3.06HZ $1399.99*

*After $100 Mail-in Rebate

EXCLUSIVE TIGER DEALS!

Sayo USB Pen Drives

S450-6064 64MB	$9.99*
S450-6128 128MB	$24.99*
S450-6256 256MB	$49.99*

*After Rebate

Lexmark i3 Color Inkjet Printer
2400 dpi printer
L40-1150P $49.99

D-Link DSC-350F Digital/Web Camera
D700 2142 $22.97*
*After $10 Rebate

DVD X Copy
Make perfect backup copies of your DVD movies!
T26 2000 $99.99

All prices are subject to change with notice. Please visit www.tigerdirect.com/m for latest pricing. We are not responsible for typographical errors.

COMPLETE EXTREME CENTER!

EXTREME SERIES

GAMER GAGES! VIDEO EXPLOSIONS! FAST DRIVES!

www.tigerdirect.com/m

ORDER ANYTIME! 888-237-6698

30 STEPS TO PC PERFECTION

Better. Stronger. Faster. Here's our lab-tested regimen for turning raw PCs into pristine power boxes.

Your first few hours with a new PC are like your first few weeks with a brand-new car. Before you can really start to have fun with the beast—before you can really push it to the full extent of its capabilities—you have to perform some important break-in exercises.

For a new car, this means setting the best seating and mirror positions. Getting familiar with weight distribution, brake feel, and power delivery. Selecting your favorite radio stations. Maybe even adding some stickers or tires. And, of course, putting enough miles on your engine before you can safely punch it to redline.

A newly built or purchased PC demands just as much attention. As far as *Maximum PC* is concerned, a power box hasn't achieved "PC perfection" until it's gone through a specific training program that our editors have adopted over years of system building and OEM testing.

Unless you've bought an overclocked, pre-tweaked rig from a boutique vendor, your PC's potential probably hasn't yet been realized. And even if you *did* buy a top-notch specialty PC or built one yourself, you might still be unaware of some valuable break-in and configuration tips.

We thus give you our list of the first 30 actions we take on all new PCs. Our regimen is designed to increase performance and reliability, and make Windows just plain easier to live with. Most of the tips can be effectively applied to any PC—those built by OEMs, those built by enthusiasts, and even old ones that have been running for months on end. We're dealing specifically with Windows XP boxes, but users of older Microsoft OSes should find some helpful tips as well.

And at the end of this article, you'll find a checklist to help you keep track of which tips you've implemented, as well as a handy, pullout reference sheet for your most vital PC information. You'll be able to stash away in one location all the hardware and software serial numbers, dial-up information, and network settings that you collect throughout your PC's lifetime. At some point, you'll want quick access to all this info, especially if you mirror your "perfect" system configuration, which we highly recommend during the course of this article.

We've highlighted the tips that we think are for experts only. Remember, all systems are different, and what works on one could be anathema to another.

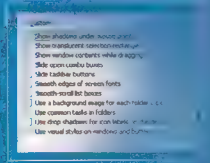
Now, let's tweak our way to perfection...

INSIDE

Feel the burn with 8 best
Exodus — page 28

Tame WinXP's default
— page 31

Do AutoPlay
page 32



Make the GUI
page 34

1 Check IDE Settings

WHY: You want the fastest data transfers possible from your hardware. But in order to get them, you're going to need to do a little planning beforehand. There's really only one thing you need to know: The ATA (IDE) interface doesn't transfer as quickly between two drives on the same channel as it does between two drives placed on different channels. With any luck, your PC manufacturer already took this into account, thoughtfully placing your optical and hard drives in the optimum positions. But don't just blindly trust your vendor. Pop open the hood, and see for yourself.

HOW: Check the jumper settings on the back of each drive—note that in order to tell whether each device is assigned as a master or slave, you may have to remove the entire drive and look at the master/slave jumper assignment illustration. It should be on the top of your hard drive, but sometimes you have to resort to checking the documentation. If you didn't get drive documentation, you'll find this information on the web site of your hard-drive manufacturer.

The following is a profile of our ideal setup. It pairs the drives we use the most—the primary hard drive and the CD-RW—with less-often-used drives:

Almost all contemporary drives have a chart on the body of the drive that indicates the proper jumper settings for master, slave, or cable select. "Cable select" was a well-intentioned idea that never took off, so don't worry about that one.

- PRIMARY MASTER: Main hard drive (our fastest hard drive also plays host to our OS)
- PRIMARY SLAVE: DVD-ROM
- SECONDARY MASTER: CD-RW or recordable DVD
- SECONDARY SLAVE: 2nd hard drive

2 GIVE YOUR SYSTEM A FIGHTING CHANCE

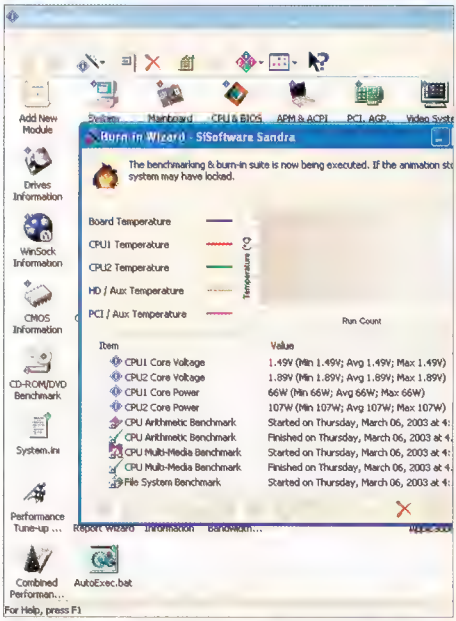
WHY: Win XP may be Microsoft's best OS effort ever, but only if you have enough RAM. Too many PCs ship with a minimum of RAM. Granted, RAM isn't that cheap, but if Windows has to resort to using your hard drive as virtual memory, your performance is going to go down the tubes. The lesson: Don't starve the OS of system memory.

HOW: We recommend 256MB as the bare minimum. Sure, Microsoft says 64MB is the minimum, and that you need 128MB to turn on everything, but we say splurge. A 256MB stick of DDR memory goes for about $40 these days. Go to the store and pick up a stick or two.

3 Burn-In Your System with SiSoft Sandra

WHY: Computer chips are kind of like potato chips, in that there are bound to be a few bad ones in every bag. The problem is, a bad CPU may work fine at first, and only collapse later under stress. By that time, you've probably put hours of setup and configuration into your new baby. That's why one of the first things you should do after receiving a new PC is "burn-in" your system for a few hours, taxing every component to see if any bad apples will expose themselves.

HOW: Grab the free version of *SiSoft Sandra* off our disc, or at www.sisoftware.net. After you install and launch *Sandra*, you'll get a choice of which subsystems you want to put to the stress-test. *Sandra* will then place a heavy workload on these systems and continually loop instructions for as long as you want it to. If your machine can survive an overnight run, you're in great shape, but a five or six hour period should suffice.



***Sandra* stress-tests your PC components by subjecting them to heavy loads for hours on end.**

4 Update Your BIOS

WHY: If "flashing your BIOS" sounds dirty to you, please skip this tip. It's essentially the same thing as upgrading the firmware of any other component, but if anything goes wrong during this update, you could completely hose your motherboard, which would prevent you from booting your PC. BIOS flashing may be the most dangerous procedure in this guide, *so think once, think twice, replacing a mobo is not very nice.* If you want to go for it, you can benefit from bug-fixes, improved hardware support, and an overall faster and more stable system.

DANGER

HOW: When you boot your PC, look at the top of the screen—you should see your BIOS name and revision number. You may have to boot several times in order to write down all the information. If you get a manufacturer boot logo, just press Escape immediately after it pops up. If you know how to get into your BIOS (usually by pressing the Del or F1 key upon booting), then your BIOS name and rev will be displayed there, as well. Once you've got it, you can check two places for updates. If you bought your system from a retailer, check the retailer's site first. If you don't find anything there, or if you built your own PC, try the motherboard manufacturer's site next. Do a search on BIOS updates within the site, and *make sure* to match up your specific BIOS revision number with the one on the manufacturer's web site. You'll also need to download their flashing utility. Note that these utilities sometimes demand a floppy disk drive. We don't like that, but that's life.

5 Tweak Your BIOS

DANGER

WHY: Many people shy away from BIOS tweaks. Maybe that's because messing with the part of your PC that acts as the mediator between the operating system and the motherboard can prevent a new PC from booting. Or maybe it's because a BIOS tweak that works wonders in one PC may cause constant blue screens in another.

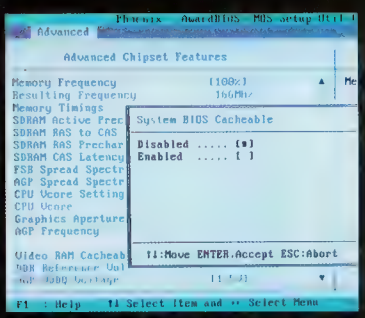
C'mon, where's your sense of adventure, people?

While we can't give you a template that will fit every system or motherboard—no one could—we can point out a few settings that usually get set incorrectly by PC resellers, or even by motherboard manufacturers. Changing these settings is highly unlikely to prevent your PC from booting, but you should still abide by the Golden Rule of BIOS Tweakage: Use your system for a couple hours in between each tweak to determine if it's introducing any system instabilities. If you do every tweak all at once, you have no way of knowing which one borked your system.

HOW: Most motherboards let you enter the BIOS by prompting you to hit F1, F2, or DEL during the initial boot-up sequence. If you have a company logo that pops up before your OS starts and you never see a prompt to enter the BIOS, try powering down the computer. When you turn it back on, hit the Esc key a few times in the first four or five seconds during boot-up. Sometimes this will make the logo screen go away, revealing the prompt to enter the BIOS.

Once you're in the BIOS, you'll see a few menu options. Most of the options you're interested in are usually under Advanced Chipset Features. Inside you'll typically find the four settings we'll be talking about. Use the cursor key to navigate to the option you want to change. Most BIOSes will tell you how to change the fields at the bottom of the screen, but the procedure usually involves hitting plus or minus, page up or page down, or just hitting Enter in the field. Save your changes and exit. OK, ready?

- System BIOS Cacheable: *Set to Disabled.* BIOS-caching copies the BIOS to a portion of the L2 cache in your CPU. Yeah, that's right, the extremely valuable and small bit of L2 cache in your chip. Since modern OSes usually don't access the BIOS, it's a waste of valuable space. There is also a small risk that a rogue program may overwrite the portion of cache and destabilize your PC. In general, leave this setting disabled.
- Video BIOS Cacheable: *Set to Disabled.* This setting copies the video BIOS to L2 and, just like the "System BIOS Cacheable" setting, eats up precious space. In general, there's more performance to be gained by freeing up the L2 cache.
- Video RAM Cacheable: *Set to Disabled.* Here's yet another legacy tweak that eats up valuable L2 cache real estate.
- AGP Aperture Size: *Set to 128MB.* The AGP aperture size allocates a memory range that can be used by the accelerated graphics port to store textures (map data or vertex data in games). The old rule of thumb was to set this field to one half of system memory. But with main memory pushing 512MB or 1GB, that's overkill. Either leave it at the default setting, or select 64MB or 128MB. We've found very little impact from the default setting, but for today's games, 128MB is the place to be.



Some motherboards still default to settings that don't make sense today, such as caching the system BIOS in L2 cache.

6 Update Chipset Drivers

WHY: If you installed Windows XP or ME, but didn't bother to load chipset drivers for your motherboard, you could be losing performance or stability—maybe a lot of it. Core-logic chipset drivers, much like the drivers for your videocard or soundcard, allow your operating system to communicate directly with your hardware. Windows XP (and ME to an extent) has a library of generic drivers for much of the world's hardware, but it's likely that those drivers don't take full advantage of your hardware, or are horribly out of date. For maximum performance and stability, we strongly recommended that you install your mobo's most recent chipset drivers so the OS knows exactly what it can do with your hardware.

HOW: Visit your motherboard vendor's web site, or the web site of the manufacturer that produced the core-logic chipset, to see if driver updates are available. Generally, the big motherboard web sites, such as www.asus.com and www.soyousa.com, have the chipset drivers appropriate to the boards they sell. But more often, you can get the most up-to-date drivers directly from the chipset maker. The only catch is that these newer driver builds may not have been tested and qualified by your motherboard maker.

For most motherboards that use Intel chipsets, hit www.intel.com and search for chipset drivers or INF updates. For boards using VIA chipsets, www.viaarena.com is the place to download the latest so-called 4-in-1 drivers. At at www.nvidia.com, you can find the latest drivers for the nForce and nForce2 chipsets.

Simply download the correct drivers for your motherboard and install them. But, again, you should respect the fact that the drivers on your mobo vendor's site may be more appropriate than newer drivers posted on your chispet maker's site. We've seen driver updates increase performance, but we've seen performance decreases as well. Sometimes, driver updates will add important stability and reliability features at the expense of a bit of speed. This is usually to cover a boo-boo in hardware that can't be fixed.

7 Convert Your Drives to NTFS

WHY: At *Maximum PC*, we're proponents of the NTFS file system. It's more reliable than FAT32, and it includes per-user security and quota settings, and automatic encryption. You lose a wee bit of speed when you shift to NTFS from FAT32, but we think having a more robust file system is worth a small performance hit.

HOW: Changing your FAT32 hard drive to NTFS is super-easy, but don't take it lightly. There's a small chance that the conversion process will completely destroy all the data on your hard drive, so you should *definitely back up your hard drive before you attempt the conversion!* Once you've done that, all you need to do is open a command prompt (press the Windows key and R) and type `convert x: /fs:ntfs` where "x" is the letter of the drive you want to convert. The next time you reboot, Windows will convert your drive to NTFS.

8 Create a Special Partition for Personal Documents

WHY: Because your personal documents (term papers, love letters, vacation photos) can't easily be replaced, they're the most valuable resources on your hard drive. So it makes sense to place them away from the "common areas" of the OS, where a hard drive write error or system crash could make you lose more than just your patience.

HOW: Ideally, you should create a separate partition for coveted docs using FDISK or the Windows XP installation routine before you install Windows XP. But if you don't want to reinstall Windows, use a nondestructive partition utility such as PowerQuest's *PartitionMagic* to carve out some space for your valuables. Create enough room for at least one complete drive image, and anything else not backed up to another medium. Better yet, if you've got more than one drive, place your documents on the drive that doesn't play host to your OS.

9 PATCH YOUR PC

WHY: There are really three kinds of Windows Updates for your WinXP installation. "Critical updates" fix both security holes (that could allow someone to wreak havoc on your PC) and coding blunders (that disable all or part of the operating system if certain circumstances are met). Simple "Windows XP" updates include bug-fixes, updates for Windows components, and other OS enhancements. Finally, there are driver updates, which can vastly improve the performance and stability of your hardware under Windows XP. Unfortunately, many of these updates—particularly the critical ones—require a reboot, and it's likely you'll have to go back to Windows Update three times before you've gathered all the newest files.

HOW: Just go to Start > Programs > Windows Update. Install the critical updates first, then go back after you've rebooted to install the driver updates, and then go back once more to add any other enhancements. It's worth the trouble, and it beats having to do all the scouring for updates on your own.

10 UPDATE YOUR DRIVERS

11 Put All Your Downloads in a Single Place

WHY: This is otherwise known as "putting all your eggs in one basket." It's something you typically shouldn't do, but we'll issue an exemption just this once. The idea is to put everything you've downloaded during a PC rehabilitation process—drivers, firmware, software updates, shareware, utilities, everything—in a centralized location. It's the "single toolbox" concept; everything is right where you need it, right when you need it.

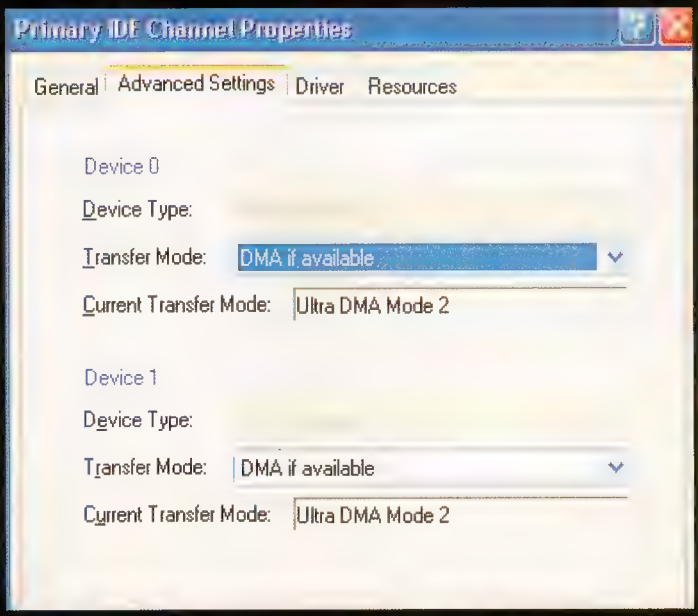
HOW: Make a folder and call it "downloads" or "toolbox" or something to that effect. It helps to make separate folders for the categories indicated above, and nested within those, separate folders for your different drivers. We recommend keeping this folder away from My Documents. Why bother backing up all these extra files that will be outdated in a few months anyway?

Toggle on DMA for Your Drives

12

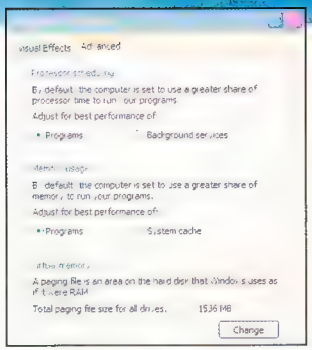
WHY: You really shouldn't have to do this, and most of the time, you'll find that your DMA (direct memory access) mode is indeed set correctly. But if it isn't, you'll experience excruciatingly slow performance from your hard drives and opticals.

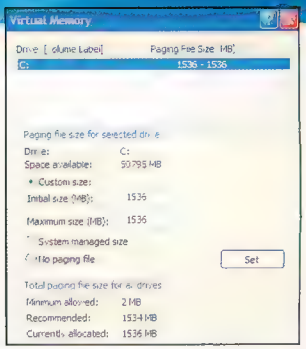
HOW: Right-click My Computer, and select Properties. Click the Hardware tab, then click Device Manager. Click on IDE ATA/ATAPI controllers. Now click the Primary IDE Channel, and select the Advanced Settings tab. The Current Transfer Mode for both devices should be set to DMA if available. If it says PIO Only, change it using the pull-down menu.



If your hard drive or optical drive doesn't support DMA (direct memory access), boy is it time to get a new drive.

13 Create a Static Swap File





Making your swap file static can save your system from endless disk thrashing and gnashing.

WHY: When your PC's main system memory is fully taxed—because, for example, you have 20 high-res images open, but only 256MB of RAM—your operating system will save temporary data on your hard drive in what's known as a "swap file." The swap file is essentially virtual memory. It performs the same function as system memory, but is much, much slower.

By default, your swap file can change its size as necessary. This was a good idea when hard drives had tiny capacities, but with today's 100GB hard drives, there's no reason to sacrifice performance for the sake of a couple megabytes. So instead of relying on a dynamic swap file that's constantly being resized, you can cut down on a lot of hard drive thrashing by switching to a fixed size. And it's best to do this ASAP.

HOW: First, go to System Properties (press the Windows key and Pause/Break), select the Advanced tab, then click the Performance Settings button. In the new window, go to the Advanced tab, then click the Change button. To create a static swap file, you can change to the custom size setting, then change both the Initial size and Maximum size to the same value.

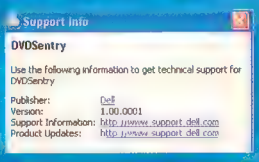
If you have more than a gigabyte of RAM, set your swap file size to 1.5 times the amount of RAM you have. If you have between 256MB and 1GB, set it to two times the amount of RAM you have. If you're running less than 256MB of RAM, we recommend you let Windows manage your swap file for you.

Once you've made your swap file static, you need to defragment it. The best way to defragment your swap file is to use a third-party defragger's "boot time" mode. Once your PC boots into Windows, it's not able to rearrange these files. Our favorite third-party defrag utility is Executive Software's *Diskeeper* (yes, just one "k") at www.executive.com. It does a great job of defragging the Windows swap file.

14 UNINSTALL UNINVITED APPS

WHY: Rare is the new PC that doesn't arrive loaded with dreary apps you'll never use, others for online services you'll never touch, and loads of sneaky shovelware. In a best-case scenario, all this debris is taking up space on your hard drive. In a worst-case scenario, crapleets running in the background could slow down your PC and cause system instabilities. Get rid of all this useless junk.

HOW: Your first stop is Control Panel > Add or Remove Programs. Go down the list and start weeding out stuff you'll never use. Next stop is Add/Remove Windows Components in the same menu. Slice and dice with extreme prejudice. If you're not sure what it does, it's probably best to leave it alone, but remember that these components can be added later using this same control panel applet.



If you're lucky, some mysterious apps will let you know where they came from or "Click here for support information" is indicated below the name of the app.

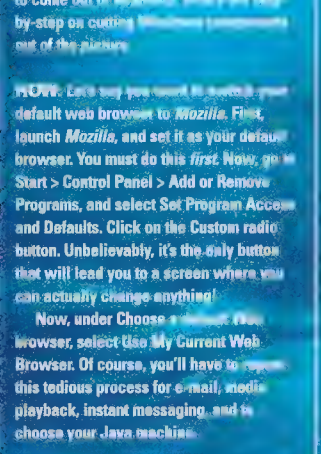
15 Lighten the Background Load

WHY: Even though you just ditched preinstalled applications you don't want on your PC, there may still be utilities and processes you don't need hanging out in the background wasting CPU cycles.

HOW: Go to Start Menu > Run, and enter "msconfig" (with no quote marks) in the dialog box. Click the Startup tab. Here you'll find a list of items that load themselves into memory when Windows boots up. All you have to do is uncheck the box next to the app, and it won't load the next time. The entry will remain, however, in case you want to re-activate it later.

Unfortunately, many of these startup apps have cryptic names reminiscent of DOSville—these names offer few hints as to how crucial the apps are to keeping your hardware and software working correctly. If you're stumped, here's a tip: Go to www.pacs-portal.co.uk/startup_content.htm. There you'll find a *huge* database of startup program names, and a description of what they do.

16 Customize Your Default Apps



When you're establishing which apps are launched by WinXP as default applications, the only screen you need to deal with is the one you get after clicking the Custom radio button.

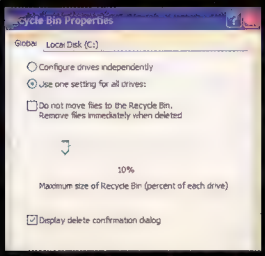
17 Reclaim Wasted Space

WHY: Lots of the default settings in Windows assume you have what would be a tiny hard drive by today's standards. For example, when the Recycle Bin made its first appearance, a 1GB hard drive was *huge*. Allotting 10 percent, or 100MB, of available space for the Recycle Bin didn't seem so weird, because who had 900MB of crap with which to fill the rest of the drive anyway? These days, however, some of the default percentages allocated to system resources by Windows XP just don't make sense when you're talking about 100GB and 200GB hard drives.

HOW: It's easy to ferret out space wasters. Start by right-clicking the Recycle Bin and going to Properties. Now change the default maximum size of the Recycle Bin from 10 percent to a more reasonable setting—probably 1 to 2 percent, depending on your drive's size.

Next cruise to System Properties by pressing the Windows key and Pause/Break on your keyboard. Go to the System Restore tab, and adjust your setting. For power-user's, we recommend moving the slider to the lowest setting, but do not allocate less than 500MB of space. So, for example, on a 75GB drive, the lowest setting leaves us with only 200MB of System Restore overhead—that's not enough. The one percent setting, however, allocates a little over one gigabyte. That's just slightly more than we'd like, but it'll do. That's more than enough space for a month or two of save points, and space isn't wasted on restore points we'll never need.

Finally you can free up a little more space by adjusting your *Internet Explorer* cache. Start *IE*, then go to Tools > Options. In the General tab, click Settings (under Temporary Internet Files), and then adjust the slider to change the amount of disk space used. We think a 200MB cache is more than enough for most users.



The Recycle Bin was first coded about eight years ago, when 1GB hard drives were top-shelf. We recommend changing the space reserved for deleted files to something less extravagant than 10 percent.

18 Install Bread-and-Butter Utilities

Right after you build or buy a new PC, you should immediately install the most essential utilities you use every day. These utilities have already established their worth, and you'll be glad to have quick access to them from the get-go. Just don't forget to register them before you image your drive! Also, don't forget to update as newer versions become available (especially if you're accustomed to using our "Clean Start" reinstall method).

Here's a list of the utilities that *Maximum PC* editors can't live without (you can find all of them on this month's disc):

- *ACDSee*. An image viewer with customizable views and fast thumbnail generation. **www.acdsystems.com**
- *WinZip*. The classic decompression utility; much better than XP's rudimentary squeezer. **www.winzip.com**
- *Zone Alarm*. Even the free version offers great firewall protection and convenient tagging of "trusted" remote PCs and networks. **www.zonelabs.com**
- *Norton Antivirus*. If you don't already know why you need antivirus protection, you're sure to find out very, very soon. **www.symantec.com**
- Ad-aware. A free, spyware-busting utility that's updated frequently. **www.lavasoft.com**
- *Pop-up Stopper*. A free version of this handy surfing shield is available, but the commercial versions squash pop-unders, too. **www.popupstopper.com**

19 Establish a Backup Dial-Up Connection

[illegible] you'll want to promptly [illegible] and chuck it out the window. Don't. Not only could you be facing a lawsuit from the person who you clocked on the head, you'll also have no way to get online if your broadband goes down.

HOW: Most broadband resellers do offer a free dial-up connection. If you're not sure about your provider, call and ask. And if your ISP *doesn't* offer this service, you're not out of luck. BAMnet (www.bamnet.com) offers a unique, pay-per-use dial-up service. All you have to do is sign up at the web site. There's no monthly fee, the service doesn't require you to install a single bit of software, and you'll get an 800 number to log in with. If you select the pre-paid plan, it's only 4.5 cents a minute. For the pay-as-you-go service, it's still a reasonable 6.5 cents. Not bad, if all you want to do is download e-mail, and then go offline.

20 Set Up Your Folder Structure

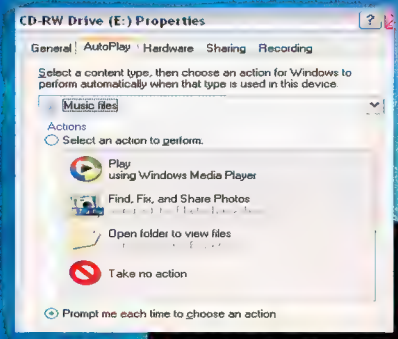
WHY: Do yourself a big favor, and create a sensible folder structure from day one. Do it before you start working, begin playing games, or even image your drive. Why? Because folder structures that are built with logic and order are much easier to work with than structures that organically grow—and grow and grow and grow—during the chaos of day-to-day computing. You'll want to choose (or create) readily recognizable, easily accessed folders for image files, MP3s, videos, text documents, downloaded executables, drivers, and so on.

HOW: Sometimes it's easiest to simply give in to Microsoft's own vision of folder organization, so you might want to create all your data folders in My Documents, where applications will default to when saving. And don't forget to back up your data frequently. Just grab your entire My Documents folder and dump it into a safer place.

21 Update Your Firmware

WHY: We're not crazy about the word "firmware" because it suggests software that'll never need to be updated. But the fact remains that updating your firmware is the closest you can get to a hardware upgrade without actually buying new hardware. New firmware—device controller software stored on a microchip—can fix bugs, improve performance, and even add completely new features to your components. So it pays to add the latest firmware to your newly minted PC. Check your component manufacturers' web sites at least once a quarter for firmware updates, especially for optical drives and digital gadgets.

HOW: Updating firmware involves a tricky process called "flashing." Although it's not all that complicated, if anything goes wrong during flashing, you could render your hardware kaput. Each hardware manufacturer uses its own flashing process, *so follow the instructions slowly, carefully, and to the letter.* Don't skip ahead, and don't go off on your own.



The pull-down menu in WinXP's AutoPlay dialog allows you to choose how Windows responds when you drop in a music CD, blank CD, data CD, DVD, or mixed-mode disc.

22 Customize Your AutoPlay Settings

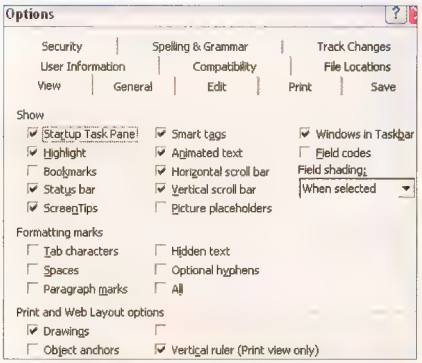
WHY: WinXP tries very hard to please. Sometimes, too hard. Thus we have AutoPlay, which is intended to make life easier by automatically playing audio CDs, opening up an image viewer when a Photo CD is dropped in, and so on. This can be a convenient feature—unless you swap CDs in and out all day like we do. Then, it's just annoying. Here's how to customize it.

HOW: Open Explorer, and right-click on your optical drive. Select Properties, and then select the AutoPlay tab. Using the pull-down menu, select a content type, and then use the "Select an action to perform" radio button to indicate how you want WinXP to handle that kind of disc. Repeat for the remaining five content types and for each optical drive in your PC.

23 Configure Application-Specific Settings

WHY: We hate this part. Going into all our apps, setting up default save folders, window views, preferences—what a drag. That's why we do it as soon as we build new systems, before we image our drives. If anything goes wrong with our partition, we can simply wipe it away and start fresh, without having to re-enter all our specific app settings.

HOW: Most application preferences can be found under the File menu, the Edit menu, and sometimes under a Tools or Options menu.



24 ORGANIZE START MENU

WHY: If you've been running your system for more than a couple months, odds are it's an absolute mess. You probably install dozens of shareware apps, game demos, and new drivers every month, and each of those bits of code wants to steal some of your precious Start menu space. We use the Start menu throughout the day, every day, and every fraction of a second longer that it takes to navigate is a fraction of a second wasted. By grouping and categorizing your apps in the Start menu, you can make them easier to find, and also contribute to the culture of tidiness that keeps a PC feeling like new for a long time.

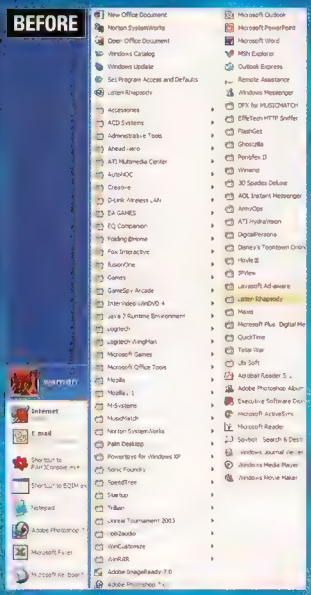
HOW: Right-click the Start menu icon, select Explore. Now right-click the Start menu again, and click Explore All Users. The first window you opened has all the shortcuts that are specific to your account. Other users on your system won't see them. The second window has the shortcuts that all users of your PC can see, so if you've got anything to hide, make sure a shortcut to it doesn't land here.

Reorganizing the Start menu from here is no different than working with any other directory structure in Explorer (except that you're working with shortcuts, not actual files or subdirectories). It's a simple matter of dragging and dropping, renaming, creating new folders, and deleting them as necessary.

If you're aware of a couple easy rules, you can reorganize your Start menu without fear. First, if something starts in your account's Programs directory, it should probably stay there. Likewise, if a shortcut is in the directory that's available to all users, it should probably stay there. The second rule is that if you have a folder that's named the same thing in both windows (that is, your window and the All Users window), it will show up as a single folder in your Start menu. So, you can have a Games directory in both your account's profile directory and your All Users directory, and anything in [illegible] access to it. Finally, if you're the only person that uses your computer, it's safe to copy all the shortcuts to the All Users directory, and just make your changes there.

Don't waste your own "CPU cycles" trying to find the programs and documents you need. If your Start menu looks like our "before" shot, follow our simple instructions and make it look like our "after" shot.

BEFORE



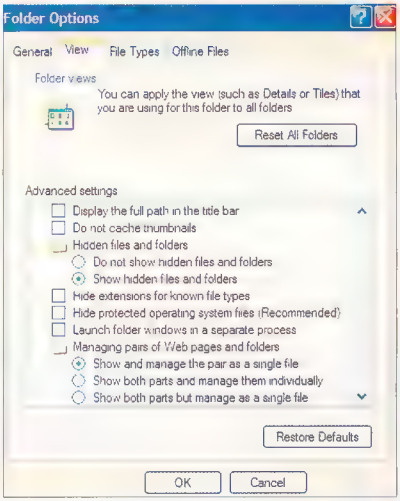
AFTER

25 Set Up Your Explorer and Folder Views

WHY: Are you tired of clicking Setup.ico on a game install CD instead of Setup.exe? How can you be expected to tell the difference between the icon and the executable if Windows prevents you from seeing the file extensions? This is newbie damage control gone haywire, so let's tweak viewing options to make Windows show us everything we want to see.

HOW: Go to the Control Panel and click Folder Options. Then click the View tab, and switch "Do not show hidden files and folders" to "Show hidden files and folders." Now uncheck the "Hide extensions for known file types" box. Finally, if you're confident in your knowledge of what is and isn't safe to mess with in Windows, you can uncheck the "Hide protected operating system files (Recommended)" setting. Now hidden and system files will show up in Explorer.

Next, open a folder—My Documents, for instance—and set it up the way you like information to be displayed. Do you prefer bulky, easy-to-see icons, or a list view with details on each file? Experiment with the View menu, and if you select "Details," like we do, don't forget that you can customize the information provided in the Details view (and even the order it's provided in) by selecting "Choose Details" a little lower in the same menu. Now, if you want to extend this same folder format to *all* your folders, just go to Tools > Folder Options, select the View tab, and click Apply to All Folders.



Can't find a file? If it's marked to be hidden by the file system, it just doesn't show up.

26 Handy Taskbar Tweaks Save Time (and Memory)

The Quick Launch bar is better than the System Tray for storing shortcuts to apps.

WHY: The Quick Launch toolbar is an unheralded time saver. Not only does it provide fast access to your favorite apps, but apps that might run in the background waiting to help (and taking up valuable system resources) can be moved over to Quick Launch where they can be launched whenever you need them.

HOW: Right-click your Taskbar, click Toolbars, and click Quick Launch. Now you'll see a new area to the right of your Start button; it's probably got shortcut icons for *Internet Explorer*, *Outlook Express*, and a couple other things. Now you can dump any shortcuts—even document shortcuts!—into the Quick Launch area. In step 15, you removed background apps you didn't want running all the time. You may want to place shortcuts to some of these apps for easy access in the Quick Launch area. They'll still be accessible, but not running all the time.

Once you've gotten the Quick Launch menu and Taskbar rearranged to your liking, you can right-click the Taskbar and Lock the Taskbar to prevent accidental clicks from messing up your positioning.

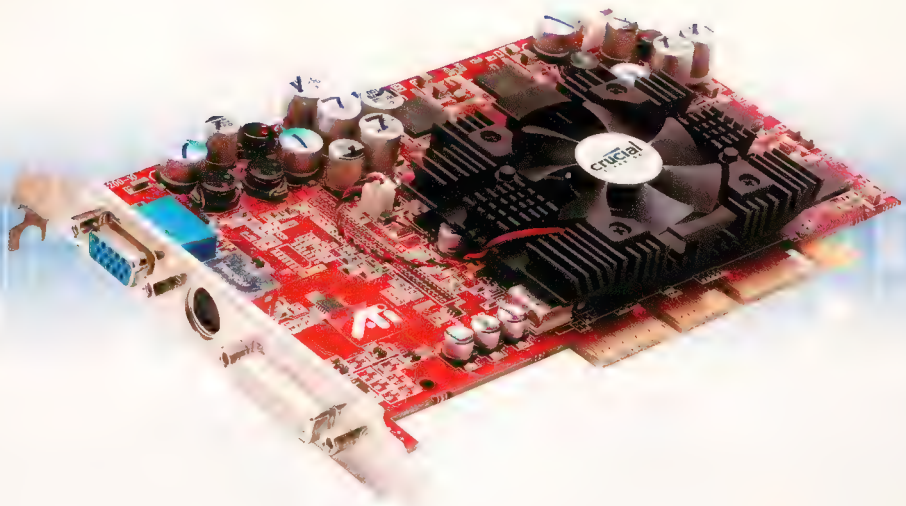
CLEAR WINXP REMINDERS

27

WHY: The first time you boot a new PC, or reinstall WinXP, you get hammered with demands to activate Windows, to use Windows Messenger, and to take the Windows Tour. You even get reports about being mapped to the [illegible] aggravating enough the first time—so don't go through it a second time.

HOW: Unfortunately, there's no way to turn off all these nag messages, but you should take care to follow all of their advisories *before* you image your drive. If you image your drive before "clearing" the nag messages, they'll just reappear every time you reinstall your clean image.

Performance. It's Crucial.



What's Crucial to you? Superior image quality at lightning-fast speeds. Excellent frame rates at high resolutions. Sharp details, realistic textures, and complex 3D in real time. The feature-packed Crucial® Radeon™ 9700 Pro video card, with the most technologically advanced video processing unit in the world, delivers life-like images at speeds unachievable in the past. Experience old entertainment in new ways, and be ready for leading-edge applications yet to come! State-of-the-art performance. It's Crucial.

Features and specs:

- 128MB high performance quad-channel DDR memory
- 325MHz core frequency/2.8ns memory
- Full hardware support for DirectX® 9
- TRUFORM™ technology
- SMOOTHVISION™
- Anisotropic Filtering
- Video Immersion™
- Free tech support
- Limited lifetime warranty

Crucial Radeon 9700 Pro Video Card

$339.99

FREE SHIPPING*

PC World's Choice

Shoppers' Computer Shopper Top Choice

Shoppers' Computer Shopper Top Choice

Circle of Excellence BizRate.com

Order online:

www.crucial.com

or call toll-free 1-888-363-5154

crucial® TECHNOLOGY *A Division of Micron*

The Memory Experts™

*See Web site for details

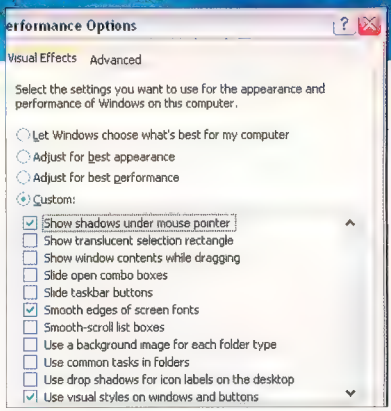
Prices may vary according to specific system requirements. The price listed was valid on 3/7/03 when we sent this ad to the publisher; however, prices may have dramatically increased or decreased since then. Visit the FAQ section of Crucial.com to learn more about why memory prices go up and down.

© 2003 Micron Technology, Inc. All rights reserved. Micron Technology, Inc., is an authorized licensee of the CompactFlash™ and MultiMedia Card™ trademarks. Crucial, Crucial Technology, the Crucial Technology logo, and The Memory Experts are trademarks/service marks of Micron Technology, Inc. in the U.S. and outside of the U.S. Radeon is a trademark of ATI Inc. and is used under license by Micron Technology, Inc. DirectX is a registered trademark of Microsoft Corporation. OpenGL is a registered trademark of Silicon Graphics, Inc. All other trademarks are the property of their respective owners. Crucial Technology is not responsible for omissions or errors in typography or photography.

28 Tame Your GUI Display

WHY: The WinXP user interface includes a lot of nifty visual effects. Unfortunately, every window animation, transition effect, and shadow effect costs a little bit of performance. Not much, to be sure, but it all adds up.

HOW: Right-click My Computer, select Properties, click the Advanced tab, and then, under Performance, click Settings. Here's the real repository for tweaking the Windows UI, and it's much more comprehensive than anything you'll find in the display control panel. Here you have options to set your GUI to best appearance (everything is on), or best performance (everything is off). You can also let Windows make the call (it usually defaults to everything on, except for "Smooth edges of screen fonts" and "Show window contents by dragging"). Because we're not completely spartan, we do appreciate a few cosmetic tweaks. We opt for a shadow underneath our mouse pointer (the shadow helps locate a lost pointer), edge-smoothing of screen fonts, and visual styles on windows and buttons. Everything else goes.



Strip away as much cosmetic junk as you can live without. Every checked box adds a tiny bit of kryptonite to Superman's coffee.

29 BE SELECTIVE IN YOUR SERVICES

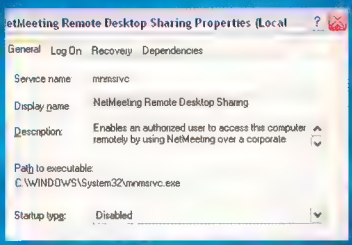
DANGER

WHY: WinXP can have hundreds of components called services, running quietly in the background. These services extend the functionality of the operating system (just like USB ports, PCI slots, and onboard audio can extend the functionality of your motherboard). Many of these services lay dormant until you need them, taking up system resources all the while. You'd be surprised at how many of these services can be yanked.

The problem is, messing with Windows services is similar to the black art of BIOS tweaking—what works on one system might not work on another. Perfecting your system is a matter of trial and error. Here's how it's done.

HOW: Go to Start > Run, and enter "services.msc" in the dialog box. Yes, you can also shut down Windows XP services by using the msconfig applet, but using services.msc (which is known as a "snap-in" manager) will prevent you from disabling services necessary for Windows to boot. You also get much more information on what each service does. By right-clicking any service and selecting Properties, this snap-in will allow you to start services, restart them, or disable them. These changes persist upon reboot.

From here, follow the same Golden Rule we learned from BIOS Tweakage: Use your system for a while after you've deleted one or two seemingly unnecessary and innocuous services, to determine if the absence of these services introduces any system instabilities.



NetMeeting. Yeah, we use that all the time. Not. We're going to squeeze it out of our background services by disabling it in the services "snap-in."

30 Image Your Drive

WHY: If you're like us, you begin putting your PC through hell within an hour of the first boot. You're a power-user, so you run all the latest drivers (some of them betas), and you're not afraid to try a few aggressive performance tweaks. But living on the edge can be dangerous—that's why they call it the "edge." One of these days, your system is going to go down. Most of the time, System Restore can get you out of this jam. But if your system is already cluttered with hundreds of outdated drivers, you might be better off just reinstalling a pristine image of your basic, squeaky-fresh Windows build. In less than three minutes, your PC will look, feel, and run like new again.

HOW: All you need is a copy of PowerQuest's *Drive Image 2002*, *Norton Ghost*, or Acronis *True Image*. All three utilities do essentially the same thing: They save an exact image of your hard drive—directory structures, your Windows config, everything—to optical media or another hard drive. First you back up your system, then install one of these imaging programs, then image your drive, lather, rinse, and repeat. When you want a fresh start, you simply load in your image copy, and you're back to a more pristine way of life. Imaging your system is one of the best forms of disaster insurance.

The Maximum PC Circuit Course

Build a better, stronger, faster machine in 30 steps. Make sure you complete and check off the entire training regimen.

- [ ] 1. Check IDE Settings
- [ ] 2. Give Your System a Fighting Chance
- [ ] 3. Burn-in Your System with SiSoft Sandra
- [ ] 4. Update Your BIOS
- [ ] 5. Tweak Your BIOS
- [ ] 6. Update Chipset Drivers
- [ ] 7. Convert Your Drives to NTFS
- [ ] 8. Create a Special Partition for Personal Documents
- [ ] 9. Patch Your PC
- [ ] 10. Update Your Drivers
- [ ] 11. Put All Your Downloads in a Single Place
- [ ] 12. Toggle-on DMA for Your Drives
- [ ] 13. Create a Static Swap File
- [ ] 14. Uninstall Uninvited Apps
- [ ] 15. Lighten the Background Load
- [ ] 16. Customize Your Default Apps
- [ ] 17. Reclaim Wasted Space
- [ ] 18. Install Bread-and-Butter Utilities
- [ ] 19. Establish a Backup Dial-up Connection
- [ ] 20. Set Up Your Folder Structure
- [ ] 21. Update Your Firmware
- [ ] 22. Customize Your AutoPlay settings
- [ ] 23. Configure Application-Specific Settings
- [ ] 24. Organize Your Start Menu
- [ ] 25. Set Up Your Explorer and Folder Views
- [ ] 26. Enable Taskbar Tweaks
- [ ] 27. Clear WinXP Reminders
- [ ] 28. Tame Your GUI Display
- [ ] 29. Be Selective in Your Services
- [ ] 30. Image Your Drive

Quick Reference

It pays to keep all your PC information—software serial numbers, tech support numbers, network information, etc—in a central location. Like, say, this handy clip-out reference sheet.

MY RIG

Manufacturer/model: _____

Tech support phone number: _____

WinXP Product Key: _____

DIAL-UP INFORMATION (OR PPPOE)

Dial-up phone number: _____

Username/password hint: _____

Tech support phone number: _____

SOFTWARE SERIAL NUMBERS

Name:	Serial#:

NETWORK INFORMATION

SSID: _____

IP address: _____

DNS address: _____

Subnet mask: _____

Gateway: _____

WEP Key: _____

As Intel pushes its system bus to 800MHz, it paves the way for a new era of desktop dominance—and RDRAM is visible only in the rear-view mirror. We give you the full roadmap to Intel's technology plans, along with a comprehensive tour of Pentium 4 chipsets.

BY GORDON MAH UNG

Let there be no doubt that Intel is firmly driving desktop PC development. Sure, AMD's new "Barton" Athlon XP processor posted impressive scores when we tested it last month. Hell, we even declared the new AMD CPU to be the performance equal of the 3GHz Pentium 4—this despite a massive clock-speed disadvantage. But this month, Intel is releasing some new technologies that threaten to leave AMD sucking exhaust fumes. In fact, to say Intel is "kicking it into high gear" might be an understatement. With its latest advancements, Intel is practically adding a seventh gear to a car that never had more than six before.

Intel's first big move is a completely new dual-channel DDR400 core-logic chipset. The new 875P will be *the* chipset for Intel's high-end desktop PCs—bad news for RDRAM lovers. The second big move is the introduction of a faster system bus. Gone is the 533MHz speed limit. You can also forget about any Prius-like performance numbers in the 600MHz and 700MHz range. How does an *800MHz* high-speed autobahn suit you?

Yep, we're turning cartwheels too.

Intel's move to an 800MHz bus is indeed ambitious. Last year, the industry expected a segue to 667MHz and *then* 800MHz. But Intel scrapped that nonsense and jumped straight to the big eight-double-oh.

It's no secret that the Pentium 4 architecture thrives on memory bandwidth. Just as a muscle car needs a throaty, free-flowing exhaust system in order to get the most from its engine, the Pentium 4 needs bandwidth. This became readily apparent when Intel introduced the 845 chipset using PC133 SDRAM. A dismal performer, the 845 cut the Limburger with its meager 1GB/s of bandwidth—the slow-speed SDRAM was an unconscionable bottleneck. On the flipside, when Intel spit out the 850E chipset, which supports dual-channel PC1066 RDRAM, the Pentium 4 began to show what it's made of. Offering an asynchronous 533MHz frontside bus and 4.2GB/s of bandwidth, the 850E is still the top-performing P4 chipset.

But with the jump to 800MHz and support for dual-channel DDR400, Intel will increase its bus bandwidth to 6.4GB/s—that's *twice* the bandwidth the P4 had available when the CPU was introduced two years ago. The boatloads of bandwidth Intel is adding to its platform is impressive, but the PC industry isn't out of the traffic jam yet: Memory speed still lags far behind CPU speed.

Consider: In February 1999, Intel introduced the then-astounding 500MHz Pentium III. This CPU ran with PC100 SDRAM memory clocked at 100MHz. But since then, memory speeds have crawled while CPU clock speeds have shot through the roof. For example, the November 2002 introduction of the 3.06GHz P4 marked a five-fold increase in clock speeds since 1999. In the meantime, the clock speed of DRAM has climbed from 100MHz to roughly 400MHz (200MHz double-pumped). Not very impressive. Only after being paired with dual-channel RDRAM has the Pentium 4 been able to reach its highest performance, but we're still clearly running toward a wall.

continued on next page

Dual-Channel DDR: What It Is, and Why It's Trouble

Dual-channel technology shouldn't be confused with DDR (double data rate) technology. DDR essentially uses both the rising and falling edges of the memory clock to effectively double performance from, say, 200MHz to 400MHz. Dual-channel, meanwhile, opens up a "second lane" through which memory data can pass. So while single-channel DDR will shoot data through just a single 64-bit lane, dual-channel DDR will have two 64-bit lanes at its disposal. Dual-channel doesn't "double" your performance a la DDR technology, but it does double your potential bandwidth, and this offers significant performance dividends in memory-hungry games and apps.

The new standard in DDR memory is DDR400 (200MHz memory double-pumped to 400MHz). Intel will initially use this memory type for its 875P chipset and 800MHz bus, but no one expects DDR400 to be at the high end of Intel's road map for very long. Indeed, in the grand scheme of memory design, DDR memory is approaching the end of its natural lifespan (see sidebar, page 42).

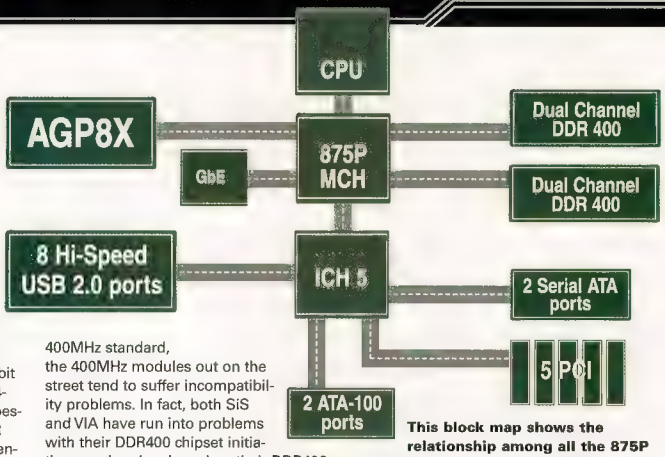
To get more performance from DDR, you must either widen its data channel, add a second channel, or increase its clock speed. Unfortunately, dual DDR is already using two relatively wide 64-bit channels, so the only move is to increase memory clock speed. But this prospect poses another problem: Increasing the clock speed of a wide bus is difficult because it requires an excessive amount of electricity and circuit path finagling.

In fact, problems associated with "going fast and wide" are also spurring the hard drive industry to move away from the relatively wide parallel ATA interface to the more narrow Serial ATA interface. Many engineers didn't think they could push parallel ATA beyond 100MHz, and most hard drive companies have chosen not to dabble with the 133MHz spec (ATA/133).

Now, if you think the case against "fast and wide" is hogwash just because there's been a recent glut of memory modules rated for 400MHz and faster, you're not taking everything into perspective. While some RAM manufacturers have produced DDR memory that can indeed reach 400MHz and beyond, these modules are rare. And because there hasn't been any 400MHz standard, the 400MHz modules out on the street tend to suffer incompatibility problems. In fact, both SiS and VIA have run into problems with their DDR400 chipset initiatives, and mobos based on their DDR400 chipsets have sometimes had to run DDR333.

All of which leads us back to Intel. Intel says that by using its pull in the PC industry, it has developed a set of DDR400 specs that RAM makers will follow. In short, Intel says, the new 875P chipset platform will experience few problems if people use memory modules made by the right manufacturers. Intel also says it has designed its chipset and chipset drivers to compensate for any variations in module quality. Intel concedes that yields of qualified DDR400 RAM will be rather low when the new chipset rolls out.

By all indications, DDR400 will be the final bus stop for DDR—no one should expect to see DDR533 or DDR600 barreling down the turnpike.



This block map shows the relationship among all the 875P chipset components. Gigabit Ethernet (GbE) now has its own AGP-like expressway to the northbridge, and soft Serial ATA RAID tunnels straight into the ICH5R southbridge.

Goodbye RDRAM, We Hardly Knew Ya

It's funny how loyalties and alliances shift so quickly. When Intel announced RDRAM as the memory of choice for its ill-fated 820 Pentium III chipset, the tech world universally shunned the new memory technology. RDRAM offered few performance perks when the P-III hit market, but cost four times as much as PC100. Now, as Intel is set to turn the lights out on RDRAM, the tech world is grieving for that particular memory as though it were a child stricken with an incurable disease.

So why did Intel give up on RDRAM? The company says it's simply responding to customer desires—a simplistic explanation of a much bigger issue. The truth is that Intel has finally been worn down by memory manufacturers, who've fought against RDRAM ever since it was introduced. It also hasn't helped that Rambus, RDRAM's creator, has tried to force its will on everyone through the courts. The company sued worldwide memory makers, arguing that it owned the technology behind DDR SDRAM in addition to RDRAM. Rambus could have also sued nVidia, ATI, or any other company that had a DDR memory controller, so you can see why RAM manufacturers have felt alienated. With very few memory manufacturers fabbing RDRAM, it's become clear that the memory type will never go mainstream. Thus, Intel has decided that in order to pave the way for a happier future, it needs the full support of the memory industry. For this year, Intel sees Dual DDR400 as the answer, while DDR-II will be next year's darling. Conspiracy nuts might envision a secret RDRAM chipset rising from Intel's labs, but they're just chasing

dreams. No quad-channel RDRAM chipset is on deck. At least not from Intel.

What's In a Name?

The first CPU to ride Intel's new 800MHz bus will be a 3GHz P4. Got it? Good. There's always a swirl of confusion when Intel ups the bus versions of its chips, and the company doesn't really help matters with its stubborn definitions.

To wit: The current fastest P4 is known as the 3.06GHz. It runs on a 133MHz bus quad-pumped to 533MHz. Because 133MHz multiplied by 23 is 3060MHz, the chip has been—and will continue to be—called 3.06GHz. Fast-forward to the upcoming chip. It runs on a 200MHz bus quad-pumped to 800MHz. Because 200MHz multiplied by 15 is exactly 3000MHz, the new chip will be called the new 3GHz. Bus speeds notwithstanding, the two chips do in fact run at different core frequencies, so Intel sees no reason to provide any special designators to signal different retail products. Consumers will simply have to understand that the 3GHz chip is the latest-greatest.

Well, we say horse-hockey to that reasoning. As far as *Maximum PC* is concerned, the 3.06GHz chip is a Pentium 4B, and the new 3GHz chip is a Pentium 4C. The original and defunct 400MHz bus CPUs are, of course, "A" versions. We've seen private demos of the new P4C, and we're impressed. We can't talk about Intel's own specific benchmarks until next month's issue, but we did steal a few minutes with one 875P-equipped system, and it showed 20 percent more performance in *SiSoft Sandra* when compared with a similarly equipped 850E chipset system. This is backed up by online reports that show the P4C/875P combo to be faster than the P4B/850E combo by a considerable margin.

Of course, benchmarks and applications that stress the frontside bus and system memory will certainly favor the new P4C platform. The added bandwidth is also supposed to greatly enhance Hyper-Threading. As one Intel engineer told us, "Hyper-Threading just *loves* the extra bandwidth." We'll have a final report once we get our hands on a real CPU and motherboard, but it's pretty obvious that if you have plans to buy or build a new P4 box, you should avoid 533MHz bus hardware, because it's on the precipice of obsolescence.

Intel engineers told us that there are minimal changes to the thermal or electrical characteristics of the actual P4 chip. A heatsink that supports a 3.06GHz P4B will be fine with a 3GHz P4C, but you won't want to plug an 800MHz bus chip into an older board. Instead, a new mobo with the 875P chipset will be de rigueur. Because Intel's processors will continue to be multiplier locked, a 3GHz Pentium 4C would become a 2GHz chip when plugged into an older 533MHz mobo.

Intel says it will continue to ship CPUs that support 400MHz and 533MHz bus speeds, but no new bin jumps for those bus speeds are planned. We strongly recommend that all Intel enthusiasts invest in 800MHz bus technology for future upgrades.

Meet the 875P—Intel's next BX

Hardcore enthusiasts like to talk wistfully about how awesome the VIA KT133A and AMD 760 chipsets were back in the day. Old-timers have even greater nostalgic affection for the Intel 440BX, which helped propel the Pentium II to awesome heights and seemingly lasted for years. The 875P may be an equally revered and durable chipset if all goes as Intel plans. Developed from the ground up as a response to upstart chipset development from VIA, SiS, and even ATI, the 875P features splashy tricks from the normally buttoned-down Intel. Check it out:

➤ Code-named "Canterwood," the 875P supports dual DDR400 channels that can be clocked down to DDR333 and DDR266. The 875P should run its best when operating in synchronous mode, and for the utmost performance, the frontside bus should run at the same speed as your memory.

➤ In the 875P, Intel also reintroduces AGP 8x support to the desktop. AGP 8x is actually available in the E7205 chipset, which was introduced late last year, but the E7205 was never intended for mass-distribution, and has since been retired. The E7205's main limitation is its lack of support for an 800MHz bus. AGP 8x doubles AGP 4x's 1GB/s bandwidth to 2GB/s. Many mobo companies have been pushing AGP 8x as a check-mark item, but few applications can actually take advantage of the added bandwidth. You don't need AGP 8x now, but you'll likely need it in a year or two.

➤ Another 875P trick is better Gigabit Ethernet support. This fastest of all Ethernet specs is the future of networking, and Intel says it wants to fix its flawed implementation. Apparently, Gigabit Ethernet performance is being stymied by all the data traffic saturating the link between a motherboard's northbridge and southbridge chips. Devices using FireWire, USB 2.0, Serial ATA, Parallel ATA, and the PCI bus are all vying for elbow room, and Gigabit Ethernet is suffering as a result. So, in the 875P, Intel has created a direct 266MB/s port in the northbridge just for network data; the technology is called Communications Streaming Architecture (CSA). The move is similar to creating a high-speed lane for video data (the AGP bus), and should elevate high-speed networking to unheard-of levels. CSA moves data traffic as close as possible to the memory controller, Intel says, and greatly reduces latency and CPU utilization.

Early numbers leaked on the Internet show that the new chipset's networking support offers nearly a 50 percent performance increase over a Gigabit Ethernet controller plugged into a PCI slot. There is one catch, though: The CSA architecture only supports Intel's Gigabit Ethernet chip. This probably won't mean much to consumers, because most people don't care whether their mobo is sporting a Broadcom or Intel chip. But it will mean that board vendors who want CSA must use the Intel Pro/1000 CT chip. So if you find a mobo that supports Gigabit Ethernet, but doesn't have an Intel controller and makes no mention of CSA, you can assume the manufacturer just picked up a lower-cost controller from another vendor, and added it to the PCI bus.

➤ The 875P is also the first Intel chipset to support the ICH5 southbridge, which brings native Serial ATA support and RAID to the table (in its ICH5R version). Sure, some of today's current mobos offer Serial ATA support, but only via a Serial ATA controller hooked into the PCI bus. The 133MB/s PCI bus is of course a potential bottleneck for any possible 150MB/s Serial ATA transfers. (Current hard drives never transfer at 150MB/s, but they will some day.)

The ICH5 southbridge has two 150MB/s Serial ATA ports. Because Serial ATA drives will plug straight into the south-

continued on next page

RAMbling Down The Roadmap

DDR400 is the last stop for the DDR memory technology we've all come to know and love. We can't unequivocally tell you what will replace DDR, but we can handicap the three strongest contenders...

DDR-II

In the race to replace DDR memory, DDR-II is definitely sitting in the pole position. Work has long been underway to establish a DDR-II spec, and memory manufacturers are already fabbing samples. DDR-II will lower voltage requirements to 1.8 volts, use a ball-grid array package, and employ a technique that pre-fetches four bits of data at a time (DDR400 currently pre-fetches two bits). As a result, DDR-II will fetch twice as much data per memory clock cycle as regular DDR memory, effectively doubling bandwidth.

If you're confused, just consider this: DDR400 runs on a 200MHz memory clock, uses a two-bit pre-fetch, and has a peak bandwidth of 3.2GB/s. DDRII-400, meanwhile, will run on a 100MHz memory clock, will use a four-bit pre-fetch, and offer the same 3.2GB/s peak bandwidth. Now, if this doesn't sound impressive, just consider what happens as you increase DDR-IIs memory clock. If you ratchet it up to 200MHz—the core clock speed of today's fastest DDR—you'll have an effective speed of 800MHz, good for 6.4GB/s of bandwidth.

One downer for hobbyists: DDR-II may require an entirely new motherboard infrastructure. DDRII-400 and DDRII-533 are expected to arrive en masse by 2004. This one's a done deal.

Quad RDRAM

RDRAM might very well persist in PCs if SiS makes good on its plans to introduce a quad-channel RDRAM chipset later this year. The chipset will use RIMM3200s, those funky sticks that shove two RDRAM channels into a single module.

The chipset would have one advantage: It only requires PC800 RDRAM, which is in plentiful supply. This alone might help RDRAM stave off the DDR takeover, if only briefly. But of course, even if SiS does enjoy some success, Quad RDRAM won't go anywhere without Intel's approval. We wouldn't invest in Quad RDRAM anytime soon.

Kentron's QBM

VIA says it plans to introduce support for Kentron's quad-band technology, which uses a special chip within the module to double memory speed. A DDR400 module with a QBM chip would thus become an 800MHz module in single-channel mode. In dual-channel mode, you'd get a yummy 12.8GB/s on an 800MHz bus.

Even better, VIA's QBM chipsets would let you use either standard DDR modules or QBM modules. One downer, however: QBM chips will add a few bucks to any stick of memory you buy. Like quad-channel RDRAM, we think QBM will be a niche product at best.

continued from previous page

bridge instead of the PCI bus, they'll benefit from reduced latency. Native Serial ATA support will also eliminate the need for drivers. Boot up an 875P motherboard with a floppy disc, and you'll be able to see your Serial ATA drives just as if they were parallel drives.

➤ The 875P is also the first chipset we know of to offer native soft RAID support (when teamed with the ICH5R southbridge). Instead of working with a separate controller chip, the 875P assigns RAID 0 controlling chores to the CPU. Even better, the 875P will let you build or destroy a RAID 0 array on the fly without having to reinstall the OS. If you start with a single Serial ATA drive and decide you want to move to RAID 0, you simply add a second drive and the Intel drivers will create the RAID relationship. If you want to move off of RAID, you execute an application to revert to a single drive.

➤ Intel has one final trick up its sleeve—"Performance Acceleration Technology" (PAT) that will separate the 875P from its little brother, the "Springdale" chipset, which is aimed at budget machines. PAT will reduce latency between main system memory and the CPU. Some at Intel compare PAT with a "Turbo" mode that can give you more performance.

Amazingly, Intel says 875P motherboards can be built with a lower-cost, four-layer production process—six layers are not required. Because the 875P supports all three of Intel's P4 bus-speed flavors, any mobo running the chipset will give you a nice upgrade path. For example, let's say you're currently running one of the original P4s designed for a 400MHz bus. That's fine. You can buy a new 875P motherboard and plug in your old CPU. Then, later, you can buy a new P4C processor when prices begin to drop. We don't expect a more significant chipset breakthrough until Intel introduces its first PCI Express chipset in 2004.

Dual-Channel Showdown: Which Chipset Is the Best of the Rest?

While the 875P is the highest-performing dual-channel chipset ever created, it's not the only one on the market. So we rounded up the existing dual-channel P4 chipsets, and pitted them against each other on their relatively slow-bandwidth byways. We ignored single-channel chipsets entirely; we already know they can't compete. SiS's first dual-channel RDRAM chipset—the R658—is also missing. We just couldn't get a motherboard in time. This is a shame, because it leaves the dated Intel 850E as the only dual-channel RDRAM chipset in our showdown.

continued on page 44

DARE TO COMPARE: Dual-Channel P4 Chipsets

	Intel 850E	Intel E7205	SiS655	SiS655
RAM type	PC1066 RDRAM	DDR266	DDR333	DDR400
RAM speed	1066MHz	266MHz	333MHz	400MHz
CPU speed	3.06GHz	3.06GHz	3.11GHz	3.11GHz
Theoretical memory bandwidth	4.2GB/s	4.2GB/s	5.4GB/s	6.2GB/s
Quake III Arena (normal settings, audio disabled)	361 fps	358 fps	**364 fps**	353 fps
SYSmark2002 Overall	301	296	**313**	302
SYSmark2002 Internet Content Creation	421	417	**429**	419
SYSmark2002 Office Productivity	215	210	**229**	218
SiSoft Sandra 2003 Composite	3354/3347	3312/3311	**3436/3445**	3371/3371
3DMark2001 SE Overall (patched)	15504	15276	**15663**	15394
3DMark2003 Overall	4778	4761	**4829**	4814

Bold denotes highest score.

© 2003 PriceGrabber.com Products/trademarks shown are not in any way intended to imply an affiliation or endorsement of PriceGrabber.com by their respective holders

Whether you're looking for a 17" monitor or a 60" TV, we'll show you how they measure up.

Simply enter your criteria, click, and within moments you're comparing up-to-the-minute r esolution. t es and prices. While opping for monito items, PriceGrabber helps you find the p that will pass your screen tes

PriceGrabber.com
Comparison Shopping Beyond Compare.™

> Computers > Soft re > **Electronics** > Video Games > Movies > Books > Toys > Office Products

continued from page 42

In addition to the 850E, we tested Intel's E7205 chipset (aka Granite Bay), which uses logy DDR266 memory. But we did score a nice wildcard in the SiS 655 chipset. With support for both DDR333 and DDR400, the SiS655 helps quell worries that SiS has slumped back into making budget chipsets. In fact, the SiS655 more than holds its own against the reigning dual-channel champion, the 850E.

For our tests, we used an Intel D850EMV2 mobo for the 850E; a Gigabyte 8INXP for the E7205; and a Gigabyte SINXP1394 to represent the SiS655. All testing platforms used the same 3.06GHz P4B, an ATI Radeon 9700 Pro, a single Western Digital WD1200JB, and 512MB of memory (Kingston RDRAM for the 850E and Corsair PC3200 for the DDR boards). Because the SiS655 supports both DDR333 and DDR400, we tested the chipset at both speeds.

So which chipset ruled the roost? Surprise, surprise, we actually saw the best performance from the Gigabyte SiS655 board running asynchronously at DDR333. We must note, however, that the SiS655 motherboard was running slightly overclocked (the SINXP1394 mobo, like many enthusiast boards, runs its PCI bus at 34MHz). The overall result is an extra 50MHz of CPU clock speed over the E7205 and 850E motherboards. That said, what we saw from the SiS655 chipset was still impressive.

Of course, this is all rather academic, because we won't have numbers on the 875P chipset until next month. Drat!

Prescott:
Big Performance, Small Package

Intel's next-gen CPU will feature fat cache, new instructions, and improved Hyper-Threading

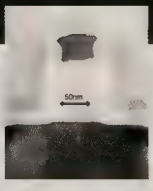
Intel must be getting cocky, because it has never released so much early information on a next-gen CPU. Due in about six months, the chip code-named Prescott is destined to replace the Pentium 4, and will be Intel's first product on its new 0.09-micron (90 nanometer) process. The shrink from 130nm to 90nm is a big step forward because it gives Intel much more chip real estate to play with. The primary benefactors will be L2 cache (it's doubling!), and new instructions that improve "multimedia" and gaming performance. Prescott will use the same 800MHz bus that Intel just announced.

Larger cache sizes will help Prescott offset problems resulting from the widening clock-speed disparity between CPUs and main system memory. With the advent of the new 875P chipset, CPUs are running at 3GHz, while DDR SDRAM is still hitting just 200MHz (albeit double-pumped for an effective 400MHz). But during its lifetime, Prescott will march toward an expected 5GHz. Its CPU frequency jumps will surely outpace RAM speed advancements as the months and years wear on. The upshot is that Prescott's larger cache sizes (L1 is increasing to 16K; L2 to a whopping 1MB) will help mitigate the clock speed disparities, and hopefully reduce the CPU's interaction with main system memory.

The new 90nm process signals Intel's first use of "strained silicon"—the actual atoms in the chip are stretched, literally spaced further apart than those of normal silicon. Straining the silicon enlarges circuit paths and allows electrons to flow more freely. This is important, because with a 90nm process, electrons are already being forced to squeeze through incredibly small pathways. Intel is also working to improve the chip's insulation technology to reduce interference as electrons drive through their circuit paths. And, finally, Intel will tinker with Hyper-Threading and the core's pre-fetch branch predictor, and redesign the layout of its core to improve floating-point performance.

When introduced late this year, Prescott may feature enough enhancements to warrant a name change to Pentium 5. Of course, Intel won't comment on this, and its corporate branding team probably hasn't yet made up its mind, but a name change could eliminate a lot of confusion if Prescott's first clock speeds match those of the fastest Pentium 4Cs. After all, what's more attractive, a Pentium 4C at 3.4GHz or a Pentium 5 at 3.4GHz? If past is prologue, confusion could be rampant. When Intel switched from the Willamette to Northwood core, it didn't rename the chip.

Even if Prescott isn't dubbed Pentium 5, we suspect the follow-up chip, Tejas, will certainly earn that distinction. Due in the second half of 2004, Tejas will use the 90nm process, but should differ from Prescott considerably. It will be teamed up with Intel's first PCI Express chipset, support DDR-II memory, and run much cooler than current CPUs. Tejas may also break from the conventional pin grid array in favor of a clamp design that some are calling "Socket T." As for clock speeds, how does 6GHz grab you? Internet scuttlebutt also has it that the Tejas chipset will run a 1066MHz frontside bus.

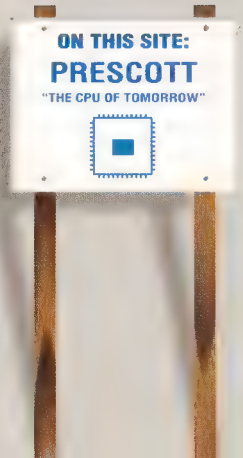


Intel's new 90 nanometer process technology boasts transistors that are as small as 50 nanometers—that's actually smaller than the influenza virus. Use that little tidbit of information to shoot down any loudmouth who says we haven't yet entered the age of nanotechnology.

Beyond Tejas, we don't even have murky rumors, but rather just a code-name—Nehalem, a chip slated for sometime in 2005. Whispers say Nehalem will be a complete redesign of the Intel core and architecture, but will still use a 90nm process. As for any type of specific specs and features, your guess is as good as ours.

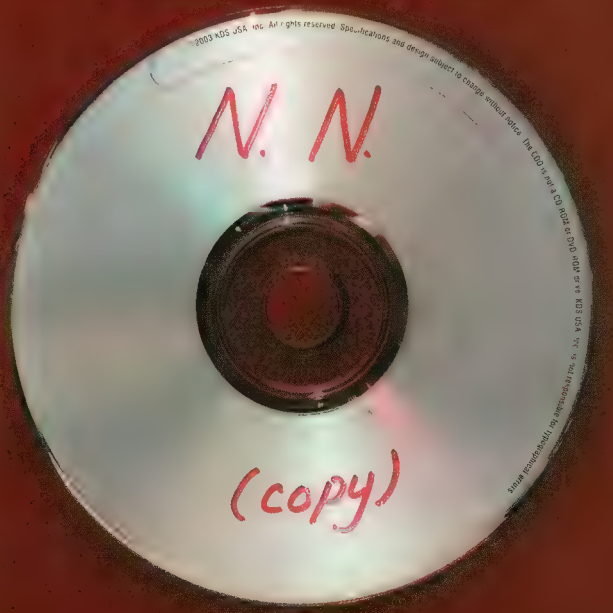
Intel isn't stopping at 90nm, of course. The company has been on a mad march toward ever-smaller process technologies since 1989. In 1997, it introduced a 0.25-micron process technology in the Pentium II. In 1997, it introduced a 0.18-micron Pentium III. In 1999, it introduced a 0.13-micron Pentium III, and this process held firm in the Pentium 4.

Later this year, we'll see Prescott launch at 90nm, and in 2005, Intel plans to unroll a 65nm process. Finally, in 2007, the company expects to introduce a 45nm part. In what types of chips these new processes will appear, we don't yet know. In every new generation, the company says it sees a 0.7x decrease in sizing, a 2x increase in transistor density, and a 1.5x increase in transistor speed. If technology continues at this rate, Intel predicts its CPUs will have 1 billion transistors by 2007. Intel says that by 2010, its basic Pentium 4 architecture could be running in the 15GHz to 20GHz range. Of course, by that time, the P4 core will be old hat. But it's always fun to theorize. ■



compact DISC organizer
disc archiving simplified

YOU FINISHED EDITING AT 3AM. DROPPED DISC OFF ON SUPERVISOR'S DESK.



WAS IT:

A) ARTICLE FOR NORTHBEACH NEWS (DEFINES CAREER) OR B) COPY OF "NAUGHTY NURSES" (DESTROYS CAREER)

IF YOU HAD THE CDO YOU'D KNOW EXACTLY *WHERE* YOUR CDs ARE AND *WHAT'S* ON THEM. Introducing the PC-Controlled CD Organizer - Store, catalog and archive up to 75 CDs (Data, Music, Video, DVDs, Game Discs and more). The CDO software archives[1] file names, disc titles and audio CD track titles[2] allowing you to search by keyword and retrieve a disc with ease. It supports multiple towers[3] and even reminds you of overdue discs that you lent to others. With the CDO, finding a disc, document, image or song is only a mouse click away. Go to www.cdoarchive.com for more info or to see a demo. **Available at Office Depot, Micro Center, buy.com, dell.com, CDW.com, compusa.com, tigerdirect.com and CDOarchive.com**

[1]Uses your PC's CD-ROM or DVD-ROM drive to scan discs. [2]Internet access is required to download track titles of published audio CDs. [3]Use of USB hubs may be required to connect multiple towers.

Cold. Bright. Colorful

A dim case window earns zero bragging rights. So, for your modded case to really strut its stuff, you'll need the internal illumination that only a cold cathode tube can provide. After all, a Radeon 9800 doesn't look any different from a GeForce MX in the dark. The 12-inch cathodes featured slightly larger than life-size here cost about $15 for a single tube, and $25 for dual tubes. Available from , , , and

TRIPPING THE MOD FANTASTIC

Your custom-built PC dream machine might be packed with the hottest CPU, videocard, and hard drives money can buy, but if you're still housing your precious parts in a plain-Jane tower, your screamer's no more bumpin' than your mama's washing machine.

If you want your PC to look as fast and furious as possible, deck it out with a few of the accessories featured in this article. Each of the components has been tested and approved by the Maximum PC Council For Hardcore Beautification.

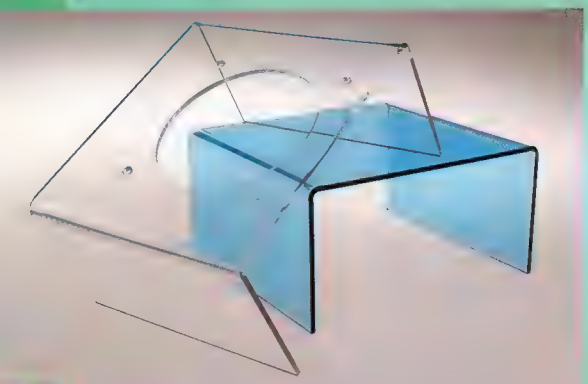
BY BRIAN LAM

4-Inch Cold Cathodes

Four-inch cathode tubes can be squeezed into all the tight places that their 12-inch brethren can only dream of entering. You'll give up some lumens, but be duly rewarded with a more accommodating footprint. The micro cathodes fit into drive bays and are small enough to occupy any crowded cranny. And, if you're looking to spice up a Shuttle-type micro ATX formfactor enclosure, these tiny tubes are the only game in town. **$13, www.pctoys.com**

Decorative Thumbscrews

At a passing glance, these shiny nubs of metal could easily be mistaken for the faux gold teeth of a rap star—*bling, bling.* But closer inspection reveals they're flashy renditions of common-place computer screws. And you don't even need a screwdriver to use them. Besides allowing your case panels, drives, and cards to be hand-tightened into place, the screws come anodized in just about every color, so you're sure to find the perfect complement for your "design theme." You should also be on the lookout for look-alikes of the screws that Cooler Master uses in its high-end cases. These screws have a Phillips top, so they can be either leisurely tightened by hand or fastidiously fastened with a screwdriver if you're the extra-cautious type.
$4 for 20 screws; www.svc.com



Acrylic Power Supply Mod

A power supply isn't all that much to look at, what with its lackluster casing and staid FCC sticker. And its uninspiring appearance can be downright irksome when your PC's interior is on constant display through a modded case window. Indeed, the PSU can totally disrupt the feng shui of your PC's innards. But if you have the huevos to crack open your ATX power brick (unplugged, of course), you can swap your PSU's original steel enclosure for a much hipper, colorful acrylic jobbie from Directron. Prying eyes will be treated to an array of PSU internals as seen through a sturdy, tinted shell. Available in configurations for most power supply formats, these PSU case mods come in about every color imaginable. **$11; www.directron.com**

Neon Maxx Blacklight Accent Paint

When viewed under normal light conditions, PC Toy's blacklight spray paint is completely invisible. But flip the switch of some UV cathodes, and suddenly your case is Studio 54 (albeit much smaller, full of wires, and without all the cocaine). The neon paint is an obvious adornment for components like fan grilles and heatsinks, but ambitious modders might go so far as to craft custom stencils for more elaborate paint jobs. The paint is available in red, green, hot pink, white, blue, yellow, purple, and orange. But please don't use all the colors on a single case unless you're going for a "Tammy Faye" motif. **$15; www.pctoys.com**

Electroluminescent Tape

Only a mad scientist could have thought this up: Crossbreed adhesive tape with the visual flair of a cold cathode tube to produce the marvel that is EL tape. Thin and flexible, the tape is the most form-fitting of all PC lighting solutions. Wind it around case edges, across windows, and over just about anything the sticky backing will adhere to. Trim the tape any way you want, but be aware that the included inverter has connects for just two pieces of tape. Don't expect the tape to glow brighter than cathodes, but it is perfect for places where other lighting won't fit.
$12; www.directron.com

12 Issues and 12 CD's for just $29

SAVE 73%

MAXIMUM PC

12 Issues and 12 CD's for just $29

73% OFF! SAVE 73% OFF! SAVE 73%

JC53SD1BY

Name

Address Apt #

City State Zip

Email Address (not required)

Please check: ☐ Bill me ☐ Payment enclosed

Offer good in US only. Newsstand price per issue is $8.99. One year Canada: US $40.00 (includes GST). One year foreign: US $56.00. Prepaid in US funds. Please allow 6-8 weeks for mailing of first issue.

MAXIMUM PC

12 Issues and 12 CD's for just $29

73% OFF! SAVE 73% OFF! SAVE 73%

JC53SD1BY

Name

Address Apt #

City State Zip

Email Address (not required)

Please check: ☐ Bill me ☐ Payment enclosed

Offer good in US only. Newsstand price per issue is $8.99. One year Canada: US $40.00 (includes GST). One year foreign: US $56.00. Prepaid in US funds. Please allow 6-8 weeks for mailing of first issue.

MAXIMUM PC

12 Issues and 12 CD's for just $29

73% OFF! SAVE 73% OFF! SAVE 73%

JC53SD1BY

Name

Address Apt.#

City State Zip

Email Address (not required)

Please check: ☐ Bill me ☐ Payment enclosed

Offer good in US only. Newsstand price per issue is $8.99. One year, Canada: US $40.00 (includes GST). One year foreign: US $56.00. Prepaid in US funds. Please allow 6-8 weeks for mailing of first issue.

SAVE 73%!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 218 HARLAN IA

POSTAGE WILL BE PAID BY ADDRESSEE

MAXIMUM PC
PO BOX 5159
HARLAN IA 51593-2659

SAVE 73%!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 218 HARLAN IA

POSTAGE WILL BE PAID BY ADDRESSEE

MAXIMUM PC
PO BOX 5159
HARLAN IA 51593-2659

SAVE 73%!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 218 HARLAN IA

POSTAGE WILL BE PAID BY ADDRESSEE

MAXIMUM PC
PO BOX 5159
HARLAN IA 51593-2659

MAXIMUM PC

The ultimate upgrade for savvy PC owners.

Black Hole BlackFlash Power Onyx Plus +

Heavy-duty PC equipment looks that much more impressive when it appears to be sucking major wattage from your wall. The BlackFlash Onyx Plus power cable is an Amazonian boa constrictor in a yard full of AC earthworms, and its hefty 10-gauge wires are capable of knocking back a whopping 10 amps at 250 volts. To top it all off, each 10-foot cable is sheathed in a jet-black mesh covering, making it the slickest power supply cable around. **$30 for 10 feet; www.blackholecables.com**

SuperBright LED Lights

CrazyPC's LED spotlight is hard to notice when it's off: The small silver pod sits discreetly inside your case, minding its own business. But when power surges through its housing, the trio of LEDs come to life. The three distinct beams of light are more focused than other lighting solutions, thanks to the lens they travel through. Use the light nodule to highlight specific pieces of hardware, or to knock out a patch of gloom your cold cathodes can't reach. **$15; www.crazypc.com**

IOSS RD3XP Gladiator IDE Cable

Gladiator shielded round IDE cables reportedly filter out electrical noise, making them more reliable than standard ribbon cables. We can neither confirm nor deny these claims because our regular ribbon cables work just fine (their propensity to aggravate heating issues, notwithstanding). But these babies have high-quality mesh wrappers and accompanying ground wires, so that's reason enough to throw them into your rig. Were they pulled from the chest of a cyborg, or from under the hood of the Batmobile? We don't know. But next to the Gladiators, other metallic rounded cables look like the Christmas tree tinsel your cat puked up. **$8; www.ioss.com.tw**

Sunbeam RheoBus

Sunbeam's fan controller has a clean face adorned with four fan-throttling knobs and accompanying LEDs. The knobs themselves are standard fare: Turn them clockwise to accelerate the fans; turn them counterclockwise to slow the fans down. It's the LEDs that make this controller really interesting. Each LED has dual colored diodes to visually indicate its fan speed. Check this out: By throttling up a fan a touch, its LED will shine blue; but turn up the fan beyond 7 volts and the LED will turn red, letting you know that the fan's really starting to blow (in a good way). **$29; www.directron.com**

Antec SmartBlue Power Supply

OK, so there's no way in hell you're gonna crack apart and mod your high-voltage power supply. You're just not *that* extreme. Enter the Antec SmartBlue Power Supply, which gives you a modded look without that annoying "death by electrocution" problem. Its two blue LEDs shine through a 92mm clear plastic fan, throwing a spotlight on the stars of your computing cabaret—your CPU and videocard. The SmartBlue's ATX cable is braided to keep clutter at a minimum and appearances up to par. The power supply itself is rated by Antec at 480 watts. **$49; www.antec.com**

Black Hole BlackFlash Special Edition Loomed LAN Cable

Jack into a LAN party hub with the BlackFlash cable, and you'll be the envy of every geek in attendance. The armored Gigabit cable is sheathed in aluminum braided hose that looks like a race car's steel brake lines. Each slinky piece of metal cable is hand-tested and finished off with gold interconnects for corrosion resistance. Your ping times won't drop, but the cable's cut-resistant sheath ensures that your network lifeline stays up during LAN party hustle and bustle. We haven't seen a better looking piece of CAT-6 yet. **$40 for 20 feet; www.blackholecables.com**

Trilight LED Fan

Antec's Trilight LED fan isn't *all* show. Besides creating a veritable light-show of your case's interior, the fan's 2,200rpm triumvirate of LEDs serves to keep your case temps down. The LEDs siphon their power from the fan's main line, so the multicolored spectacle doesn't come at the expense of wire clutter. The Trilight LED fans come in both 80mm and 120mm sizes. Perhaps best of all, the LEDs don't increase the fans' profile, so they'll mount anywhere a standard fan would. We can't testify to the prowess of the fan—there are better blowers—but this whirlybird does look good. **$25 for 120mm, $10 for 80mm; www.antec-inc.com**

Electroluminescent Case Badge Light

Case badges were the original case modification. Swapping an "Intel Inside" sticker for an AMD badge was a cheeky tweak that let people know whose hardware powered your box. That was back in the day when cold cathodes could be found only on the undersides of Turbo Supras. Bring your modded case badge into the current millennium with an electroluminescent case-badge backlight. Drill a small hole in your case, slip the thin EL-powered panel into place, and then situate your badge atop the backlight for a cool radiating effect. **$19; www.directron.com**

DDRMaxx Copper Memory Heatspreader

If you didn't spring for performance DDR RAM, it's likely you're sporting unsightly naked DIMMs. For shame! With a little fashion help from some copper covers, you can have those bad boys looking sharp. The covers are intended to tame RAM temps, but the adhesive padding is a bit thick, in our opinion. We suspect they won't cool your RAM to any helpful degree. The real reason for throwing a heat spreader on sufficiently cool DDR is to appease the eye. Mounting these smooth, reflective copper spreaders is the easiest way to dress up raw, drab RAM chips. **$10; www.pctoys.com**

Military Switch

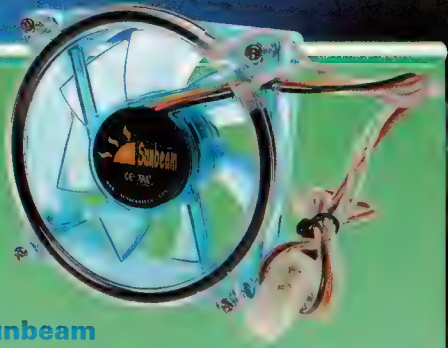
When the firefight gets underway in *Battlefield 1942*, wouldn't it be cool to sound a red alert and throttle up your auxiliary fan array with a simple flip of an honest-to-goodness military switch? That's just one of the many possible uses for this all-purpose, heavy-duty case switch that's indeed approved for use by the U.S. armed services. A finer toggle you will not find. A bright red safety cover prevents misfires, and by throwing it into its prone position, the underlying switch is kept safely off. We'd like to see a row of these switches complementing a custom camouflage paint job for the ultimate ready-for-action aesthetic. Set the switches up to control any of your accessories. Just make sure you have a drill, a 15/32-inch bit, and a soldering iron for proper installation. **$23; www.directron.com**

Security Case Screw

Paranoid PC users, rejoice. These chromed security screws make unauthorized parts removal impossible—without the included key, that is. Taking the place of standard screws, the security screws can keep LAN party competitors from messing with your components. They can also securely lock down your drives and PCI cards. Because they look so good, you'll be tempted to use the screws throughout your case, inside and out. But don't be overzealous. If you switch parts regularly, you'll find that these screws take a bit more time to tinker with than the regular variety. One more hint: Don't lose that key unless you're prepared to run your current parts indefinitely. **$4 for one screw and key; www.directron.com**

Crystalfontz LCD Display Kit Model 632 USB

With the Crystalfontz LCD display, you'll be able to appraise your PC's status at a glance. Set up the backlit screen to report a number of useful stats in the highest of style. We've set up our LCD to show CPU utilization, e-mail subject headers, MP3 track names and numbers, and EQ settings. It's perfect for managing MP3s without the aid of an overly conspicuous 21-inch monitor. Available in blue, yellow, and white backlights, with black or silver bay mounts, there's a Crystalfontz LCD display out there that's sure to match your lifestyle. **$80; www.highspeedpc.com**



Sunbeam Cathode Fan

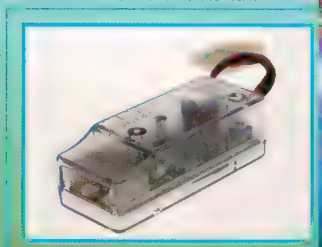
Here's an interesting twist: You don't necessarily want to highlight the gear in your box. Rather, you're hoping to detract attention from the dust bunnies and disorder inside your PC. When it comes to case fans, you can't get any more eye-catching than the extra-strength lighting of a cathode. We weren't thrilled about the added cable clutter of the cathode and power inverter, but the truth is, you barely notice it (or any other imperfections) amid the fan's blindingly bright lights. The downside? The fan grill is thick enough to make traditional mounting locations tricky. **$19; www.directron.com**

North Bridge Maxx Chipset Cooler

Some motherboards have fans on their northbridge chips, and some have heatsinks. Then there's the kind of motherboard that has neither, and looks the worse for it. Place this shiny, blue porcupine of a heatsink on your bare northbridge chip to cool it off a few degrees, and increase your mobo's pimp factor tenfold. The heatsink is passive, meaning it should provide enough cooling without a dedicated fan. Be warned: Once the thermal paste goes on, the aluminum heatsink ain't coming off. **$10; www.pctoys.com**

Cathode Sound Module

People tap their feet and clap their hands to the sound of music. But PCs just sit there, lame and inanimate, despite the irresistible kick and snare drum in Britney's new Top 40 hit. How'd you like to see your PC do the Running Man while cranking out the tunes? Well, *that's* not gonna happen. But the sound-sensitive cold-cathode controller is the next best thing. Plug it in and your PC's lights will get all jiggy wid it, flashing on cue with low-frequency beats. The microphone sensitivity is adjustable so you can sync it up just so, then sit back and enjoy the show. **$6; www.pctoys.com**



Nexus Fan Controller

With its sci-fi etchings and blue button halos, the Nexus is one of the most handsome fan buses around. And with four fan dials on its fashionable black (or silver) faceplate, the Nexus is also robust—capable of handling even the biggest, baddest air pushers. (It's rated at 19 watts per channel, which is powerful enough to accommodate even fast 92mm fans.) While it would've been super-cool if the relative speed of each fan correlated with the relative intensity of each knob's LED, that's unfortunately not the case. Each ring gets fully blue regardless of how much power its associate fan is using. But we must admit, it does look purty. If you're one of those *Star Trek* nuts with a computer known affectionately as the Enterprise, this fan controller is a must-have for your fleet. **$30; www.vantecusa.com**

From Beige to *Bombastic*

How to turn a no-nonsense full-tower into a knockout

The Addronics 7890A full-tower case is nice and all, but it's not in and of itself the stuff of dropped jaws and double-takes. For that, you need the magic that is modding...

Many mod accessories are inexpensive and easy to install, making the possibilities for case decoration practically limitless. As you can see, we went all-out sprucing up the Addy, using just about every doodad discussed in this feature. Now *that's* a looker!

That's Entertainment, ViewSonic® Style.

With ViewSonic, entertainment doesn't cost more, it simply looks better. TV, gaming, music, home movies and digital photos are an integral part of life. With breakthrough video processors and digital media centers plus widescreen HD displays, ViewSonic merges all your entertainment options into powerful, easy-to-use technology with breathtaking image quality and fingertip remote control. For instance, the new VT550 15" LCD TV System is designed for both work and play with exceptional video screen performance, including 181 channel capability, complete multimedia functionality and off-the-desk video cabling at a fraction of the price of other LCD TVs.

Now Every Room Can Have A View

Uptime, downtime. Work and play on the same wide screen LCD TV. ViewSonic has made the desktop far more than a simple workspace. Now it's a virtual visual playground on the N1700w wide-format 17" LCD with its own 181 channel TV tuner and remote control convenience. With additional connections for PC, DVD player, VCR, gaming console and digital cameras, your desk chair may be the best seat in the house!

Enrich family viewing with spectacular next-generation technology. ViewSonic's big-screen 42" and 50" plasma displays coupled with the incredible power of the new M2000 Digital Media Center provide a larger-than-life entertainment experience that's as versatile as it is easy to use. Sit back with your remote and watch and record TV and DVDs, store, organize and play music, movies and more. On-screen menus make it all as easy as a click of the remote.

Expand your entertainment vision. Add TV to any monitor. Check out the complete line of advanced video processors from ViewSonic. They transform your display into a complete entertainment experience. Simple connections for high definition TV, DVD, VCRs, gaming consoles and digital cameras expand your desktop viewing capability for an amazingly low price. Use the remote to quickly switch between these options and your existing PC.

See your dealer today, contact ViewSonic at 1-800-888-8583 or visit ViewSonic.com.

Specifications and pricing subject to change without notice. Corporate names and trademarks stated here in are the property of their respective companies.
Copyright © 2003 ViewSonic Corporation. All rights reserved. [11002-00E 02/03]

Ask the Doctor

Symptom » Diagnosis » Cure

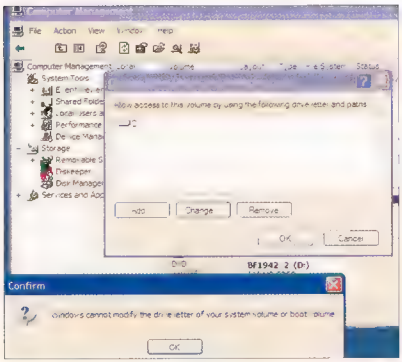
Have a burning PC problem? How about a burning PC sensation? We're more than happy to help you with your PC problems, but you might want to get that sensation thing checked out by a qualified sensation checker-outer. If you have PC questions, send them to **doctor@maximumpc.com**. Just remember: We can't answer every e-mail. Oh, *no*—not by a long shot.

Backing-Up Before a Reinstall

My computer is running Windows XP Home. The computer itself works, but an error occurred, and now I'm unable to start Windows. I have tried a number of things to repair the OS, but the only thing left is to do a clean install, which will wipe my entire hard drive. Is there a way to copy my files to another computer or to a CD using DOS command prompts? I know Windows has a "settings and files transfer wizard," but as far as I know, Windows has to be running on both computers to use this. Thank you in advance for your response.

—JAKE FRIESEN

The Doctor has not found any way to change the drive letter for the boot drive without also completely destroying all the shortcuts and Registry references at the same time.



Windows XP's built-in utility won't let you change the letter on the boot drive, to avoid hexes and demons.

You have two options: You can transfer the info from the old hard drive to another drive or floppy disk using the command-line-based Recovery Console, or you can use a third-party utility, such as *Drive Image* or *Ghost*, to back up the drive to CD or DVD, and then extract the files you want when the system is up and running.

We recommend the image program over the recovery console. It's difficult to recover any file larger than 1.44MB using the recovery console if you don't happen to have a spare hard drive around. If you do want to try the recovery console, boot off the Windows XP install CD, then select the Recovery Console option at the first prompt.

Why Did I Get an F?

I recently built a new system, and I put my original hard drive that still contained all my data in the new system. I really just wanted to copy the contents of the old drive to the new drive, but when I installed WinXP Pro, it labeled my new drive as F:.

I don't understand why this happened. The old drive was supposed to be the slave, and the new drive the master. But the old drive is labeled C:. I took the old drive out after transferring what I needed, but the new drive is still labeled F: I tried to change it, but I get a message saying that I cannot change the drive letter on an MBR. Is there anything I can do, short of reformatting and reloading? Or am I just stuck with an F: drive?

—ROBERT GOOD

Now that you've managed to get everything installed on F: and have been booting off that partition, you're probably stuck. The Doctor has not found any way to change the drive letter for the boot drive without also completely destroying all the shortcuts and Registry references at the same time.

Booting off the F: drive isn't inherently wrong, it's just a little odd. As long as you can cope with an occasional bit of weirdness, your PC will be just fine. Of course, if you want your hard drive to be C:, you'll need to wipe the new hard drive, remove the old hard drive, and install Windows to the new drive. Then, after everything's up and running, reinstall the old drive and pull your files from it.

I've Got Trace.log Coming out of My Ears!

For the last several weeks, I've had a very annoying problem with my Windows XP system. My C: drive has a file called Trace.log that grows until it fills all available space on the drive (about 6GB) in a matter of hours. If I reboot, the file is deleted and a new file is created and begins to grow again. I believe some kind of trace was triggered when I had trouble running a Microsoft utility called *Bootvis* that's supposed to speed up boot times on the PC. I reinstalled the utility and told it to stop tracing, but the activity persists. How do I determine who or what is causing the trace log to grow?

—MARK WATSON

Getting rid of a stray trace log is easy enough. Just go to Start >Control Panel (make sure you're in classic view) >Administrative Tools >Performance. Click the Performance Logs and Alerts section, and then click Trace Logs. It's probably safe to delete anything that's in there.

The *Bootvis* utility uses trace.log to record everything that happens during your PC's boot process. It's supposed to stop recording once your PC finishes booting, but if it doesn't, it could easily absorb all the free space on your drive in short order.

For those people who aren't familiar with it, *Bootvis* is a great little utility that lets you optimize your PC's boot time. The fastest way to find the utility is to type the name into www.microsoft.com/search. A link to a download page should be the first option you see.

Smaller, Slower, Worse

I have a PC with an internal 6-in-1 card reader and no floppy drive. I would like to install Windows XP onto a 512MB CompactFlash card and use the 6-in-1 card reader to try several different OSes. I have a few different CF cards and would like to put a different OS on each one. This way I could boot into the OS of choice by inserting the correct

CompactFlash card before turning on the PC. Is this even possible?

—RON ALDINGER

What you want to do might be possible, Ron, but the Doctor strongly advises against making the attempt. There are quite a few reasons it's a bad idea.

First, a 512MB CompactFlash card isn't big enough to hold Windows XP. We haven't tried to minimize disk requirements with the new OS, but the smallest install we've seen approaches 1GB.

Second, CompactFlash is slow. To add insult to injury, your 6-in-1 card reader is probably connected to your PC via a USB 1.1 port, which is more than 10 times slower than ATA/133—the most current IDE hard drive technology.

Third, most motherboards have problems booting from USB devices. Booting from USB really only works with newer motherboards. If your mobo is more than a year old, chances are it won't boot.

Fourth, there are lots and lots of ways to set up multiple OSes on a single hard drive. Boot managers, like the NT Loader (which comes with Windows NT, 2000, and XP) and LILO (which is a part of most Linux distributions) are easy to use and will perform much better than CompactFlash cards.

Trouble with Toolbars

A month ago, I let my nephews use my home PC to check their e-mail on MSN. Little did I know, they were receiving e-mail containing material intended for, let's say, mature audiences. One of the links they clicked added a toolbar to my Views >Toolbars called "Adult Links." I would like to remove it, but I can't find any help on this topic in Windows XP Personal Edition. Do you have any advice?

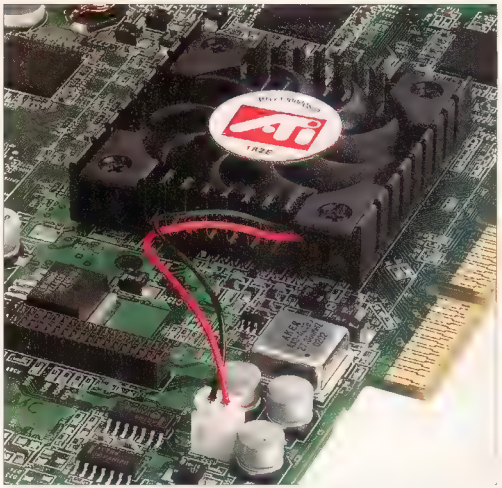
—DARRIN MEALIO

Lucky for you, we were able to find a fix for the damage your "nephews" did. After digging around the net for a bit, we found this page: www.doxdesk.com/parasite/AdultLinks.html. At the bottom of the page are detailed instructions explaining what Registry keys and files you need to delete to get rid of the incriminating toolbar entry. If you want to avoid this sort of trouble in the future, try *Mozilla* (www.mozilla.org). It's much better behaved, and won't let nasty programs like *Adult Link* or *Gator* take over your browsing.

How Much IDE is Too Much?

I've got a Dell computer 8100. It's got two hard drives, one floppy, one CD, and one CD-RW drive. I want to add a DVD/CD-RW drive, the problem is that I can't find a cable that will connect to all the CD and DVD drives. I've talked to Dell numerous times; I'm told I would have to eliminate one of my drives. I asked why the computer comes with a spare bay and power cable for another drive but no cable to operate it. Dell doesn't have an answer. Is there anything you can give me?

—TIM BOWN



Most current 3D accelerators include easy-to-remove heatsinks, like this one.

Most motherboards, especially the type sold by Dell and other mainstream vendors, support just four IDE devices. They include two IDE chains with two devices per chain. The easiest way to add your DVD/CD-RW drive is to remove one of the hard drives or the CD-ROM drive, then put the new DVD/CD-RW drive in its place.

If you find it absolutely necessary to keep all four of your existing drives, and you have a free PCI slot, you can add a stand-alone IDE controller. You can grab a Promise Technology Ultra 133 TX2 for about $50, which should do what you need.

Klipsch Conundrum

I recently purchased the Klipsch GMX-D5.1 speakers from Alienware. Now I'm having problems getting optimum output from these speakers as they're digital and work differently than typical analog speakers. I have a Sound Blaster Live 5.1 Platinum soundcard. Can I get a detailed guide describing the proper way to install these speakers?

I've e-mailed Klipsch about this matter, but haven't received sufficient advice. Please help!

—BOI222

We covered this in last month's review of the speakers, but we'll rehash it here. The new Klipsch GMX-D5.1s were designed primarily for console gamers and include only digital 5.1 support. For PC gamers, this setup sucks, because most soundcards can send only a PCM stereo signal digitally. If you want to get 5.1 sound out of your GMX-D5.1s you'll need an nForce motherboard or a soundcard that can output a Dolby Digital 5.1 stream. Unfortunately, no Sound Blaster products can do that now. Your GMX-D5.1s are essentially 2.0 speakers unless you have a properly outfitted soundcard.

Upgrade My Heatsink, Dag Nabbit!

I need to know how to remove the heatsink and fan from my videocard. The card is an nVidia GeForce2 GTS. The problem is that the heatsink looks like it's glued on; it's not attached with little fasteners. The other problem is that the wire from the fan looks like it's soldered or glued to the board. Will I damage the card if I pull off the wire? I bought a chipset cooler pack, which came with a heatsink and fan, but no instructions.

—LESLIE CHAVERA

You're probably out of luck, Leslie. Most of the time, heatsinks are glued to the chip with something that just won't come off. We've heard of people who have put the card in the freezer, and then, once frozen, successfully popped off the heatsink. We haven't personally tried it though, and applying any kind of force to your GPU could cause permanent damage.

If your fan's wires are soldered to the board, you need to first remove the solder using either a wick or a solder sucker, then reattach the new fan to the same leads.

(Just pulling them could cause permanent damage to your board.)

If you want to upgrade your video cooler, make sure your current cooling system is attached with pins and a fan connector that will be easy to remove (see above picture for an example). ■

How To...

A step-by-step guide to tweaking your PC Experience

PROTECT YOUR WIRELESS LAN

There are snoops, sniffers, and data thieves in your neighborhood. Here's how to protect your 802.11 network.

BY WILL SMITH

Every month, you pay five sawbucks for a broadband Internet connection, and your favorite way to savor the lightning-fast downloads is via a wireless Internet connection. But danger lurks in this high-speed, free-range utopia. Just consider how many seedy online guides explain how to get "free broadband" by leaching off someone else's precious Wi-Fi bandwidth!

MAXIMUM PC
TIME TO COMPLETION
00:42
HOURS MINUTES

Stolen bandwidth isn't the only problem. Once thieves can leech your net connection, they can also get access to files on your PC, track the sites you browse, and even read your private e-mails and instant messages. Yikes! *It sucks to be you.*

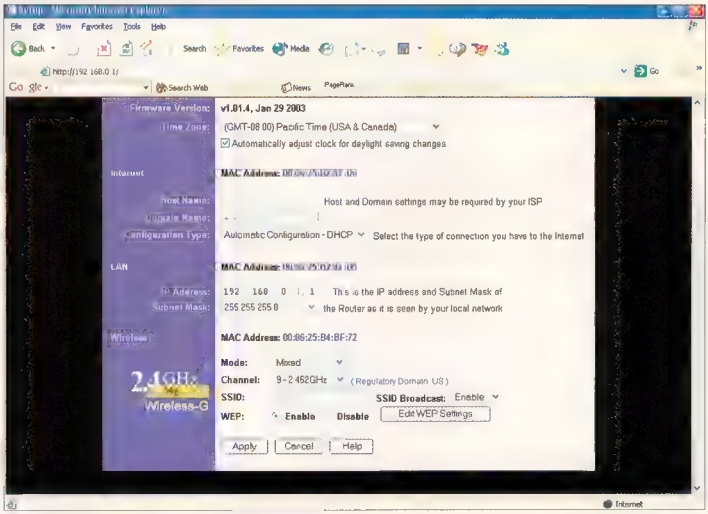
But that's where we come in. We're here to save you from bandwidth pirates and other pimply ne'er-do-wells. Whether you use 802.11b or 802.11g, the precautions for wireless safety are about the same. We'll show you how to lock down your data and minimize the chances that wireless snoopers will leech from your LAN.

Wireless networking entails that every data packet to and from your PC be broadcast over the airwaves, so there's always a chance that someone will be able to sniff your data. If you want to make your LAN 100 percent secure, you'll have to disconnect it from wireless technology entirely. Still, the tips in this article will protect you from all but the most determined miscreants.

What You'll Need

- 802.11b or 802.11g access point
- 802.11b or 802.11g cards to access the LAN
- 100Mbit Ethernet hub
- NetStumbler (www.netstumbler.com)
- Laptop computer

Give Your Network a New Name



Your network's name can actually be a weak spot. In order to gain access to your network, an intruder has to know its name—commonly called an SSID. Most access points from a single manufacturer ship with the same SSID (preset at the factory) and the easy setup programs that come with the hardware don't always encourage users to change the SSID.

What can you do to fix this? Change your network's SSID! Open up the configuration program that was provided with your access point, and change the SSID to something completely unique and obscure. We recommend that you *not* use anything obvious, such as your hardware manufacturer's name, or words like "default," "wireless," "802.11," "network," "home," or anything else that may be easily guessed after just a few tries.

While you're changing the SSID, make sure to change the password for your APs administration account. No matter how secure you make your AP, it's wide open if a cracker can just log in using the username and password printed in the instruction manual.

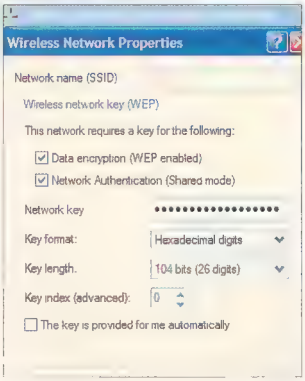
Changing your SSID is the first step you need to take, but it's certainly not the end of your lockdown routine.

Get WEP Working

Enabling WEP—wired equivalent privacy—is the second-most important thing you can do to stymie would-be wireless freeloaders. WEP isn't 100 percent secure, but cracking the encryption technology isn't a simple exercise. In fact, it presents more trouble than most common bandwidth thieves are willing to wrestle with.

First things first: If your access point and your Wi-Fi card support 128-bit encryption, use 128-bit encryption. A 128-bit key can indeed be cracked, but even under perfect circumstances, a cracker will have to sniff packets from your wireless network for six or more hours in order to get enough data to generate a WEP key. And we repeat: That's in an *ideal* situation. It can actually take days or longer to sniff enough packets to crack a 128-bit key.

Of course, a 128-bit key won't help you if it's just 1111 1111 1111 1111 1111 1111 11. Interfaces for entering keys will differ from access point to access point. Some APs require that you enter the key in hexadecimal, while others prefer plain ASCII text. Luckily, the Windows wireless control panel lets you enter your key in either format, so make sure you enter the key in the same format in both places!



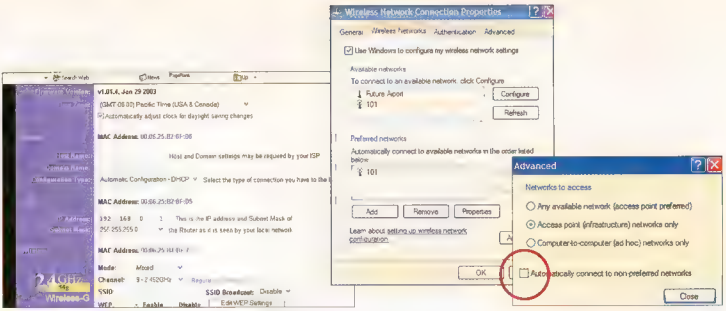
When you create your key, remember that hex keys can include the digits 0 through 9 and A through F. ASCII keys can be any letter of the alphabet or any number. For maximum security, avoid repetition or any kind of pattern.

You Gotta Keep 'em Separated

Now that your access point is reasonably secure, it's time to separate your networks. By separating them, you'll deny access to your wired LAN even if a cracker manages to break into your wireless LAN. The separation process involves getting a second hub and a second IP address from your ISP, and then setting up a firewall on your wired network.

First, you'll need to rewire your wired network. Connect your new hub to your DSL or cable modem, then connect your wired LAN to one port on the hub and your access point to another port. Next, configure your access point with the new IP address. Now you have two separate networks—one wired and one wireless—running off the same broadband modem. Of course, none of this will do any good if you don't have a firewall on your wired LAN, so make sure you at least have *ZoneAlarm* running on your router.

Disable SSID Broadcasting

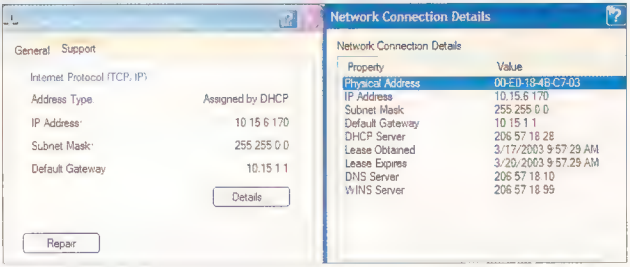


The SSID is your network's name. By default, most access points are set to broadcast their SSIDs to a compatible Wi-Fi device in the vicinity. So not only can crackers discover vulnerable wireless LANs by driving around with Wi-Fi enabled laptops, they can also get network names at the same time!

Most access points, however, include an option to disable SSID broadcasting. It's generally a good setting to disable, but we have had some problems maintaining connectivity when using the Windows built-in wireless configuration interface to connect to Wi-Fi LANs with SSID broadcasting disabled. And this problem is exacerbated if other people in your neighborhood have wireless LANs set up.

If you're noticing interference after disabling SSID broadcasting, there's a setting you can change to minimize the problem. Right-click My Network Places and select Properties. Now right-click your specific wireless connection, and select Properties. Go to the Wireless Settings tab, and select the Advanced option. Uncheck the "Automatically connect to non-preferred networks" option.

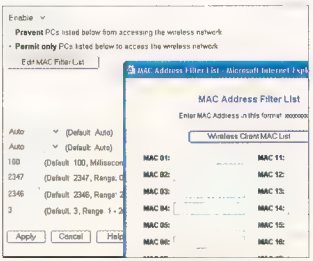
Super Security



Most access points are able to deny wireless access to unknown computers. You see, each network card has a unique number assigned when it's manufactured. This "MAC address" is a 12-digit code, and no other piece of network hardware will share the same code. By telling your wireless LAN to grant access only to network cards that have known MAC addresses, you can prevent unknown users from gaining entry.

Each AP will handle MAC address filtering differently, so you'll need to consult your instruction manual. The Linksys interface is pictured above. Just remember, any time you want to add a new authorized user to your wireless LAN, you'll have to get the MAC address, go into your access point's configuration screen, and manually enter it.

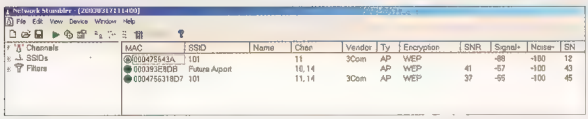
To get the MAC address from a Windows XP system, right-click My Network Places and select Properties. Next right-click your wireless network connection and select Status. Go to the Support tab, and press Details. The MAC address is labeled Physical Address in the window that pops up.



Check Your Back

If you've followed all our instructions, your wireless LAN should be reasonably secure. If the National Security Agency wants into your wireless LAN, there's not much you can do to stop it, but our tips should keep little Billy next door from using your DSL line to download gigabytes of Trent Reznor MP3s.

Regardless, you should still install *NetStumbler* (www.netstumbler.com) on one of your wireless PCs, and see if your LAN shows up. *NetStumbler* is the most common 802.11 network sniffer. Most likely, it's what your enemies will be using to discover and compromise your LAN. If you configured everything correctly, your access point shouldn't even show up in this utility's window. If you don't see it, the freeloaders probably won't either, and will just move on to easier prey. ■



The Inside Story on Power Supplies.

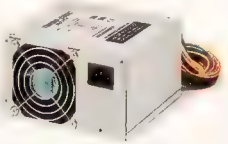
Turbo-Cool® 510

So-Called 550

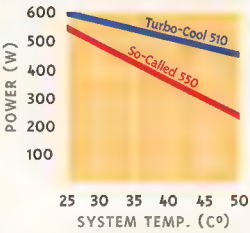
Power @ 25°C:	**600W**	**550W**	Rating requires room temp. < 60°F
Power @ 40°C:	**510W**	**366W**	40°C is the temp. inside a typical PC
Power @ 50°C:	**460W**	**244W**	50°C is the spec for an industrial PC
+12V Output:	**34A**	**24A**	Powers the processor(s) and drives
Regulation:	**1%**	**5%**	Maximum voltage fluctuation
System Cooling:	**44 cfm**	**40 cfm**	Tests show second fan is ineffective
Active PFC:	**Yes**	**No**	Continuous range line conditioning
Voltage Pots:	**Yes**	**No**	Adjustments for system imbalance
Intel Approved:	**Yes**	**No**	Turbo-Cool 510 tops Intel's ATX12V list
Warranty:	**5-Years**	**1-Year**	Reliability and longevity indicator

Turbo-Cool® 510 is the Expert's Choice.

Turbo-Cool power supplies have powered Maximum PC's Dream Machines for the last five years and are recommended by motherboard manufacturers such as Asus, SuperMicro, Tyan, and Intel.



Don't be Mislead by Wattage Claims!



*Even though the ambient temp. inside a loaded PC is at least 40°C (104°F), most manufacturers unrealistically assume 25°C (77°F) in order to exaggerate their wattage claims. Since the proper full-load rating is 15°C higher, these power supplies produce **33% less power** than their advertised ratings as shown on the derating chart.*

***Turbo-Cool 510 derating spec:** full load @ 40°C, decrease to 90% load @ 50°C.*
***So-Called 550 manufacturer's spec:** full load @ 25°C, decrease to no load @ 70°C.*

PC POWER & COOLING, INC.

High-Performance Computer Power Supplies Since 1985

www.pcpowercooling.com • 5995 Avenida Encinas, Carlsbad, CA 92008 • (760) 931-5700 • (800) 722-6555

Complete specifications and pricing available on website. Turbo-Cool is a registered trademark of PC Power & Cooling, Inc. ©2003

In the Lab

A behind-the-scenes look at Maximum PC testing

Let's Benchmark Some Notebook Graphics!

Tit-for-tat, butter for fat, ATI's dog kicks nVidia's cat

You'd think that cross-sniping would have left both ATI and nVidia breathless by now. But, oh no, each company is still full of enough piss and vinegar to fight for graphics supremacy. This episode of "In the Lab," however, concerns not the desktop 3D war, but rather what's happening inside notebooks. Both companies have announced mobile graphics chipsets with DirectX 9 support, and promise speed that's damned close to that of the best desktop GPUs.

The ATI mobile/desktop Franken-traption did beat nVidia's finest desktop part in some key benchmarks.

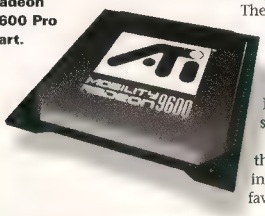
nVidia's high-end part is the GeForce FX Go 5600. It'll thrust and parry with a 350MHz core and a 350MHz DDR memory clock. Very similar to the desktop GeForce FX 5600 Ultra (nVidia's midrange part, not to be confused with the 5800 Ultra), the mobile version adds improved PowerMizer 3.0 management. And, thanks to its 0.13-micron process, it's perfectly suited for hot, steamy, electrically modest mobile environments.

ATI counters with the Mobility Radeon 9600 Pro, a right impressive part considering the company's history. Even when nVidia dominated the performance desktop space—a position it no longer owns—ATI was the mobile graphics king. In fact, the company trumped nVidia last year when it released the Mobility Radeon 9000, the world's first DirectX 8.1 mobile part, complete with programmable shaders. The 0.13-micron Mobility Radeon 9600 Pro runs a 350MHz core and 300MHz memory, and is based on the desktop Radeon 9600 part

We didn't get a chance to test nVidia's GeForce FX Go 5600, but ATI was kind enough to let us tinker with a sample Mobility Radeon 9600 sitting on an AGP card. This sample was not the "Pro" version of the new mobile GPU, and was running just a 300MHz core and 250MHz memory. Testing mobile graphics power in a desktop PC is uncharted territory, but we figured, "What the hey, this is just a preview—we'll get real mobile parts soon enough."

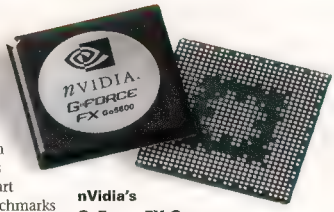
Using a 3GHz Pentium 4 and 512MB of DDR333 stuffed into an SB51G Shuttle box, ATI "simulated" the config of a high-end gaming notebook. When we benchmarked the proxy rig, ATI asked us to compare the Mobility Radeon 9600 with a top-of-the-line GeForce FX 5800 Ultra desktop card running at 500/500MHz DDR.

ATI says it expects to legitimize user upgrades of notebook graphics with its Mobility Radeon 9600 Pro part.



The ATI reps said they didn't even care if our GeForce FX 5800 Ultra was running on a dual-channel RDRAM motherboard, because the Mobility Radeon 9600 would still be competitive.

We told the ATI folk that their proposition was intriguing, but declined in favor of more controlled head-to-head testing at a future date. But we can tell you that the ATI mobile/desktop Franken-traption did beat nVidia's finest desktop part in some key benchmarks ("some" being the operative word—the GeForce FX 5800 Ultra won the majority of our impromptu tests).



nVidia's GeForce FX Go 5600 will go up against ATI's Mobility Radeon 9600 Pro.

Still, ATI's test rig did indicate that the Mobility Radeon 9600 will be the fastest mobile GPU ever created once it's ready for deployment.

In *3DMark2001 SE*, we saw the chip hit 10,699 3DMarks. In *3DMark2003*, it spit out 3,137 3DMarks. We also ran our standard *Quake III Arena* test with 4x AA turned on, and we were duly impressed with a score of 67.5fps. All of these scores easily leapfrog the results we got from a Dell Inspiron 8500 sporting a GeForce 4 4200 Go.

The Pro version of the Mobility Radeon 9600 will feature a thermal sensor to let the chip automatically over- and underclock itself. The chip essentially runs as fast as it can, and if it detects overheating, it throttles back.

ATI also says it has finally reached the Holy Grail of notebook graphics: an upgradeable part. For example, if you buy a notebook with integrated graphics (care of ATI's 7000IGP chipset), and your notebook manufacturer supports upgrades, you should be able to buy a Mobility Radeon 9600 Pro and slap it in. ATI says upgradeable notebooks will be available later this year, and Mobility Radeon 9600-equipped notebooks should be ready by the time you read this. Pro versions of the mobile GPU are scheduled for this summer.

nVidia says GeForce FX Go 5600 notebooks should be available by the time you read this, as well. When we're able to test both parts in comparable notebooks, we'll let you know which one is fastest.

MOBILE GPUs AT A GLANCE

	ATI Mobility Radeon 9600 Pro	nVidia GeForce FX Go 5600
Code-name	M10	NV31M
DX 9 support?	Yes	Yes
Process	0.13-micron	0.13-micron
Core	350MHz	350MHz
RAM	300MHz, 128MB max GDDR2M	350MHz DDR, 256MB max
Effective bandwidth	54.4GB/s	22.4GB/s

GearGrip Micro Computer Harness & GearGrip LCD Shield Harness

A mini PC and LCD flat-panel may be the perfect tools for a LAN party, but they're still not easy to carry. But with Case Ace's new GearGrip Micro Computer Harness and GearGrip LCD Shield Harness, you can sling your entire system over both shoulders and keep your hands free to carry the pepperoni pizza.

The GearGrip Micro has a compartment to store cables, a mouse, some CDs, and most keyboards, and can fit both cube- and rectangular-shaped mini PCs. The GearGrip LCD Shield Harness features a shield that protects your delicate LCD surface from scratches and punctures. The LCD harness runs $39 while the computer harness runs $35. More details are available at CaseAce's web site: **www.geargrip.com**.

Armor Plated DVDs: Do They Work?

We put scratch-resistant media to the test

TDK says that its new "Armor Plated" recordable DVDs provide "100 times greater resistance to damage" than traditional discs, thanks to a hard coating over the disc surface that rebuffs scratches, repels ink, and is even antistatic. But does it work? We think it does.

We deliberately sabotaged a number of Armor Plated discs in order to replicate some of the boneheaded things we sometimes do by accident. For example, we wrote on the "wrong side" of a disc with a permanent black Sharpie pen. The result? Every bit of ink slid right off when we rubbed the disc with a napkin. Spooky.

There's no question that the Armor Plated discs were far more resistant to scratches than normal media, and the scratches that did appear were extremely thin and didn't prevent us from accessing our data. Non-Armor Plated discs, meanwhile, showed wide scratches with smeared edges, and the discs were rendered useless after just a few minor nicks.

TDK says the price increase for the armor will be "nominal." Of course, if you're paranoid about scratching delicate DVD recordable media, any price for the armor plating may be worth it. Our verdict? Thumbs-up to TDK's tough media. It should be available in electronics stores this summer in 4x +R and –R formats.

Best of the Best

As of May, 2003

Here are our current top picks for each hardware category. Red text indicates first month on chart. Check back next month for updates.

High-end videocard:
Hercules 3D Prophet 9800 Pro

Budget videocard:
ATI Radeon 9500 Pro

Do-everything videocard:
All-in-Wonder 9700 Pro

Soundcard:
Sound Blaster Audigy 2 Platinum

Hard drive:
Western Digital 360GD Raptor

CD-RW drive:
Plextor PXW4824TA/BPS

DVD burner:
Sony DRU-500A

LCD monitor:
Sharp LL-1820

CRT monitor:
Sony F520

P4 motherboard:
Asus P4T533-C (still waiting for 875P motherboards)

Athlon XP motherboard:
Asus A7N8X Deluxe

Portable MP3 player:
iPod 20GB

Photo printer:
Epson Stylus Photo 1280

Pocket PC PDA:
Toshiba e740

5.1 speakers:
Logitech Z-680

4.1 speakers:
Logitech Z-560

2.1 speakers:
Klipsch Promedia 2.1

The games we're currently playing: *SimCity 4, Battlefield 1942: The Road to Rome, Tom Clancy's Splinter Cell, Unreal II The Awakening*

Rejected!

Every month, we present the world's best case mods on the last page of the magazine. But what about the rejects? Here are some mods that didn't make it past the judging panel.

The Hoops PC

When 14-year-old Mike Rotch of Kenosha, Wisconsin, wanted to mod his PC, he started with something he thought no one had ever seen before. Mission accomplished, Mike! We've never seen such a thing! (We've also only recently become aware of a televised singing competition that's apparently quite popular.)

The Pay PC

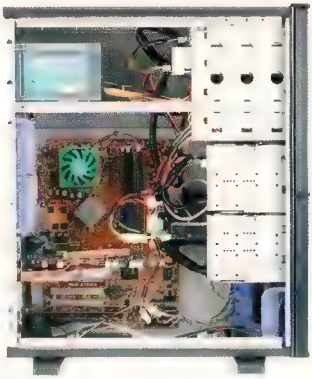
Configured by Anthony Hole of Rapid City, South Dakota, the Pay PC was created for freeloading relatives who come over to download MP3s because Anthony's connection "is so much faster." The USB-powered reader accepts both dollar bills and the new Sacagawea coin.

The Case Cozy Mod

Jacques Strape of Moose Jaw, Canada, says on cold, cold winter nights, his problem isn't cooling his CPU, but keeping his case warm enough to prevent condensation and shattered hard drive platters. So Strape knitted this case cozy using a "double increase" method.

ABS Ultimate M6

Not the component config we'd build ourselves



The ABS Ultimate M6 packs a GeForce FX 5800 Ultra videocard.

Last month Falcon Northwest was about to send us a system with the new nVidia videocard, but we opted to receive Falcon's Mach V Exotix with a Radeon 9800 Pro instead. We had already spent some time with the GeForce FX, and wanted to take some benchmarking stabs at the ATI card.

Thus ABS made real our first "OEM approved" GeForce FX experience—and the machine didn't perform poorly in the lone gaming benchmark that we include in system reviews (we dropped our custom *Jedi Outcast* benchmark in January because of incompatibility problems with Intel's Hyper-Threading). In fact, the FX-powered M6 system yielded a heady 88fps in Game 4 of *3DMark2001 SE*, a next-gen, programmable shader test.

Not all is just as it seems, though.

In Game 4, the brute horsepower of the GeForce FX's 500MHz core rules, but that doesn't make the videocard the fastest 3D accelerator available. In fact, in last month's Head2Head department, we concluded that ATI's Radeon 9800 Pro is the faster of the two technologies—and doesn't drone on and on like an ugly drunk. Maybe ABS shares the same opinion. At press time, ABS was pushing the Radeon 9800 Pro on its web site.

The M6 does indeed have a noise problem, and we're not talking about the soft whir emanating from the rig's generous battery of five 80mm fans. No, we're talking about the annoying high-frequency, high-velocity, small diameter fan sound that has you climbing the walls like a battered POW after 10 months in a bamboo cage. We usually don't comment on system noise unless it's abnormally silent (like Dell's Dimension 8250) or annoyingly loud. High-performance often has some strings attached. But the FX card in the Ultimate M6 spurs us to grouse. It's that grating.

If you can ignore the noise of the GeForce FX, the Ultimate M6 is actually a pretty nice box. Built into a Cooler Master ATC-710 case, it features an Athlon XP 3000+ with 1GB of Corsair Micro DDR333 RAM, a Lite-On 16x DVD-ROM, and a 4x NEC DVD+R/+RW drive. A 22-inch NEC FE2111SB monitor draws display duties—kudos to ABS for including a big, flat, aperture grille CRT instead of a flat-panel LCD.

But we just don't get the inclusion of the Audigy 2 soundcard. We love this card for its 24-bit, high-fidelity playback, but ABS also bundles the new Klipsch GMX D-5.1 speaker system (which received a 7 verdict in last month's issue). These speakers only support full 5.1 sound in digital mode—and the Audigy 2 (and most other 5.1 soundcards) sends just PCM Stereo to the digital output. So the Audigy 2 can't really reach its potential with the Klipsch system.

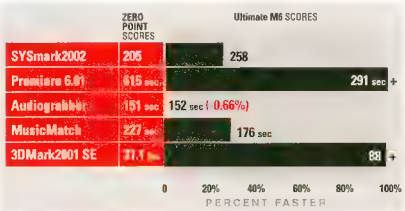
We liked the cool 7-in-1 media reader (which includes a floppy drive among other I/O options), and the rig didn't disappoint us in *SYSmark2002*. In this benchmark, the M6's 8MB cache WD hard drive kept up with the Falcon's RAIDed 2MB cache IBM drives. But of the three Athlon XP 3000+ systems we've tested, the Ultimate M6 was the slowest in our *Premiere* test, though not by much.

To improve the rig's overall config, we'd either swap out the Klipsch speakers for an all-analog 5.1 set, or ditch the Audigy 2 and get a mobo with the "Deluxe" version of the nForce2 chipset (which outputs digital 5.1 sound). We'd also opt for an ATI videocard over nVidia's latest, and do something about the mismatched color scheme of the components peaking through the front bezel. The M6 is a nice rig, and ABS's overall "out of the box" consumer experience is top-notch. We just don't like some of the component choices.

—GORDON MAH UNG

UNDER THE HOOD

THE BASICS	
CPU	Athlon XP 3000+ (2.17GHz)
Mobo	Asus A7N8X (nForce2 chipset)
RAM	1GB PC3200 (DDR400) Corsair
I/O ports	Four USB 2.0, PS/2 mouse, PS/2 keyboard, Parallel port, one serial ports, VGA, DVI, three analog audio out, line in, mic in
LAN	Onboard 3Com, nVidia 10/100 Ethernet
DISPLAY	
Videocard	nVidia GeForce FX 5800 Ultra (500MHz / 500MHz)
Monitor	22-inch NEC FE2111SB (20-inch viewable)
STORAGE	
Hard drive	120GB Western Digital WD1200JB (8MB cache)
DVD-ROM	Lite-On 16x DVD-ROM
DVD burner	NEC ND 1100A (4x DVD+R, 2.4x DVD+RW, 16x CD-R, 10x CD-RW, 12x DVD-ROM, 40x CD-ROM)
AUDIO	
Soundcard	Sound Blaster Audigy 2
Speakers	Klipsch GMX D-5.1
FINE DETAIL	
Case	CoolerMaster ATC 710
Fans/extras	Five 80mm fans, case window with cold cathode light
Mouse	Microsoft Wireless Optical
Keyboard	Microsoft Wireless MultiMedia Keyboard 1.0A
BUNDLE	
Windows XP Home	
BOOT: 49 sec.	**DOWN: 6 sec.**



Our zero-point system includes: an Intel D850MV motherboard, a 2GHz P4 CPU, 512MB PC800 RDRAM, a GeForce4 Ti 4600 videocard, and a Western Digital 1000BB hard drive (2MB cache).

MAXIMUMPC VERDICT

Ultimate M6
ABS COMPUTERS

LUKE SKYWALKER
Athlon XP 3000+ still shines despite its hefty price
Nice CRT. Good overall packaging and build quality

YOUNG ANAKIN SKYWALKER
Noisy GeForce FX 5800 Ultra had us climbing the walls. Sound subsystem is ill-conceived

www.abspc.com
$3,450 (w/o monitor and speakers)

8

Ain't Nothin' But a G Thang, Baby . . .

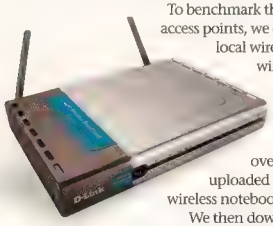
What does 802.11g bring to the wireless networking party?

The Linksys access point includes a router and four-port hub, but it's still more difficult to configure than it should be.

Wireless networking isn't particularly cool, but it's become a vital part of most *Maximum PC* editors' lives. Because we've become so reliant on 802.11b LANs at home and work, parts of us shrivel and die when we enter a Wi-Fi dead zone. That's why we were so excited to see the first batch of 802.11g equipment enter the Lab.

802.11g is an upgrade to the "b" spec. It operates in the same 2.4GHz spectrum as 802.11b, but its throughput is spec'd to hit 54Mbps to 802.11b's 11Mbps. The hitch is that the 802.11g spec isn't expected to be final until later this summer. Nonetheless, both D-Link and Linksys, whose access points are reviewed here, are promising fully compliant firmware upgrades when the spec is ratified.

Like some earlier Wi-Fi products, we found both access points to be insanely difficult to set up, especially if you enable WEP encryption—a necessity in today's world of Wi-Fi sniffers and data theft. We figure that if we had trouble during setup, your dear old grandad will have an aneurism.



4Mbps? Hah! We couldn't get the D-Link access point to move beyond 802.11b download rates.

To benchmark the performance of the access points, we connected them to our local wired LAN and set up two wireless clients and one wired client. Our first test measured the maximum throughput possible over a wireless link—we uploaded 101MB of files from a wireless notebook node to the wired PC. We then downloaded the same files from the wired PC to the wireless notebook. Our second test measured performance in a busier wireless environment: We repeated the tests, but used two wireless machines that share bandwidth on the wireless network. Files were transferred via FTP.

—WILL SMITH

D-LINK DI-624

Configuration and setup for both kits was hellish, but getting the D-Link up and running was definitely the more difficult proposition. Initial setup was deceptively simple. We plugged a PC into the D-Link's integrated Ethernet hub, and then set the machine to automatically obtain an IP address. We then fired up our web browser to configure the access point, but in using this "Easy Setup" option, we weren't able to get WEP (a wireless network security protocol) working properly. We were finally able to enable 128-bit WEP, but this required going into the manual security settings—an elaborate hassle.

Once we finally got the kit configured, the DI-624 performed poorly. We simply couldn't tell whether the access point was in 802.11g mode. No matter what we did, the cards we used to connect to the access point reported a mere 2Mbps connection speed to Windows. We were able to download our 101MB file from the wired computer in 84 seconds, which works out to about 9.7Mbps, far short of the 54Mbps promised by the 802.11g spec. Things got even uglier when we ran two machines on the same wireless LAN. Our download time increased from 84 seconds to a whopping 229 seconds. We expected a slower transfer when sharing one access point, but we didn't expect it to be *three times* slower!

On the plus side, the D-Link includes all the options that network admins will want to tweak, including router filters, a DMZ, and even the transmission delays on the wireless protocol.

LINKSYS WAP54G

Linksys' 802.11g effort is a little better than D-Link's, but it was still a pain to get the WAP54G working, especially with WEP encryption enabled.

Linksys' configuration procedure is similar to D-Link's: Plug a PC into one of the built-in Ethernet ports, and then point your browser to a URL. Linksys' "easy" config was more effective than D-Link's, but we still had to delve into menus and manually tweak our WEP key length, SSID broadcasting, and some other features. Linksys also allows you to set a DMZ PC, or individually configure the ports on your router to pass incoming data to different PCs on your LAN.

Performance trumped the D-Link kit, but it still wasn't "five times faster than 802.11b." We downloaded our test files in 44 seconds from a wired PC, and 85 seconds from another PC on the wireless LAN. If you're just getting into wireless networking, and are looking for a router, the WAP54G isn't a bad place to start. Just be prepared to spend some time on the phone getting everything configured.

CROSS-COMPATIBILITY CHECK

Both access points worked with standard 802.11b cards, but by using them in 802.11b mode, you lose 802.11g support across the node. For that reason, we recommend you set your access point to 802.11g-exclusive mode, which will prevent passing 802.11b users from hurting your performance.

Faster is always better, but if you're just going to use one of these access points to share broadband through your home, 802.11b is more than fast enough to accommodate the maximum download speeds of most cable and DSL connections. If you've already got an 802.11b setup, wait until the "g" spec has matured a bit before upgrading.

DARE TO COMPARE: 802.11G ACCESS POINTS

	WIRED ACCESS POINT TO WIRELESS NODE		WIRELESS NODE TO WIRELESS NODE	
	Upload	Download	Upload	Download
D-Link DI-624	164 sec	84 sec	366 sec	229 sec
Linksys WAP54G	57 sec	44 sec	125 sec	85 sec

MAXIMUM PC VERDICT

DI-624
D-LINK

+ TUMS
The DI-624 has all the right ingredients from a features standpoint, and we love the integrated four-port hub.

– ROLAIDS
Too hard to set up and performance is alarmingly slow. The "Easy Setup" option doesn't work.

www.d-link.com
$150

6

MAXIMUM PC VERDICT

WAP54G
LINKSYS

+ THIN MINT
Faster than the D-Link kit, especially when more than one machine is connected to the wireless LAN. The integrated four-port hub will let you connect some non-wireless machines to the router too!

– LINT
Configuration was difficult. Linksys uses a default SSID for all its products, so make sure you change that as soon as you turn it on.

www.linksys.com
$130

7

Monsoon PlanarMedia 14

Flat and oh-so-crisp. Mmmm... good speaker

The Monsoon PM14s aren't just good *flat* speakers, they're good speakers.

Like all Monsoon speaker systems, the PM14s use flat-panel satellites and a subwoofer to produce great sound from a tiny little package. To create sound, traditional speakers modulate a single transducer, creating vibrations in a large paper cone. The problem with this strategy is that the entire cone surface is vibrated from a single, centralized point, and this can compromise sound quality.

The Monsoon satellites, meanwhile, use a ribbon transducer, which applies an even force to a relatively small diaphragm across the full length of the transducer. Because of its small mass, the Monsoon diaphragm moves much more rapidly than the diaphragm of a normal paper speaker cone. The result is that Monsoon's satellites produce particularly crisp sound in the high and midrange frequencies. On the downside, flat-panel speakers have traditionally had problems reproducing low-frequency sounds, and can't match the massive volumes produced by magnets and paper-cone speakers.

The latest Monsoon satellites still don't offer much oomph on the low-end, but they do sound great, and the entire system offers good volume for a flat-panel rig. Our 20Hz to 22kHz frequency sweep was flawless—there wasn't even a hint of a hiccup during the sat-to-sub crossover. The system's 8-inch, front-firing, ported sub is adequate for bass production at normal volumes in games and music.

The PM14 satellites produce a well-defined sound field, whether you're directly in front of the speakers or positioned at an off-axis listening point. The sound reproduction at normal listening volumes is super-crisp for highs and mids. We really can't stress this enough: These speakers are awesome at reproducing midrange sounds. Of course, the mid-goodness comes at a cost. As is common with flat speakers, the PM14s exhibited significant distortion as we approached maximum volume.

If cranking your PC to 11 is your bag, then the PM14s aren't for you. Spend a few more bucks, and pick up some Klipsches. But if you're interested in a modest but still great-sounding 2.1 rig, then you've come to the right place.

⊕ **SENSORY DEPRIVATION:** Great sound quality at normal listening volumes. Control pod handily mounts under either speaker.

⊖ **OXYGEN DEPRIVATION:** Distorts as you approach maximum volume.

—**WILL SMITH**

MAXIMUM PC VERDICT: 9

$150, www.monsoonpower.com

Hewlett-Packard Pocket PC h1910

So little—yet so much to love

Palm PDAs have always kicked Pocket PC booty in one key area: size. While Pocket PCs have traditionally offered far more power, they've never been very petite. But Hewlett-Packard's diminutive h1910 steers the PPC platform in a new direction. Weighing just slightly more than four ounces, the h1910 is roughly the size of the ancient Palm V—yet it boasts today's technology. There's an Intel XScale PXA250 200MHz CPU, 64MB of RAM, an SD slot, infrared, and a transflective screen that's simply to die for. Most PDAs, such as Palm's Tungsten and Toshiba's e740, use side- or front-lit screens. These screens are a vast improvement over backlight-only screens (which become washed out in daylight), but their uneven lighting was always a complaint. Enter transflective screens, which combine the best of both worlds. The h1910's 3.8-inch display puts both the Toshiba and the Tungsten T screens to shame. Supporting 16-bit color and a 240x320 resolution, the HP h1910 is simply dazzling next to other PDAs.

Not all is perfect, though. To keep costs down, HP cut out support for SDIO devices like Wi-Fi and Bluetooth adapters, and the PDA's SD slot supports storage duties only. And while you get 64MB of RAM, just 46MB are available for storage.

There are also some other oddities, such as a reversed "universal" connector which doesn't support serial devices. Expansion capabilities certainly aren't the strong suit of the h1910, but then again, HP doesn't think peripheral freaks will be interested in the h1910. The handheld is designed for people who want basic PDA functionality and the ability to run an occasional MP3 file or *Acrobat* file.

The battery—plain Lithium-Ion instead of Lithium Polymer—is rated for 900mAh. It's also user-replaceable, should it take a dump in a couple years. HP says the battery can run up to 14 hours depending on how you use it. We played MP3s for an incredible six hours before the h1910 gave up. That's downright amazing when you consider how tiny the thing is.

We would have liked a full SDIO slot and more RAM, and maybe even some wireless capability. But with its small formfactor, the h1910 is pretty hard not to love.

⊕ **PEE-WEE GOLF:** Tiny, yet fully Pocket PC functional. Has one of the best screens we've seen on a PDA.

⊖ **PEE-WEE HERMAN:** Doesn't support SDIO devices, and doesn't come with a carrying case or cradle.

—**GORDON MAH UNG**

The h1910's transflective screen henceforth raises the bar for PDA displays. Put simply: It's stunning.

MAXIMUM PC VERDICT: 9

$300, www.hp.com

Western Digital 360GD Raptor

The 10K barrier is now officially broken

It might hold just 36GB, but it's the fastest ATA drive ever.

Until this month, the most elite ATA hard drives were defined by 8MB of cache and 7200rpm spindle speeds. But now there's a brand-new performance feature designed to excite enthusiast desires: 10,000rpm spindle speeds, brought to you by the folks at Western Digital.

The new 360GD Raptor is the first ATA drive to offer a five-digit rotational speed (SCSI drives have offered 15,000rpm for quite a few years), and it's going to change the face of the hard drive landscape forever. Faster platters can provide an instant shot in the arm for any hard drive. Random access times go down, while transfer rates go up—all because each sector on a platter's surface passes under its drive head many more times per second. The Raptor is a Serial ATA drive (Western Digital's first), and it's intended for light server duty (despite the fact that Serial ATA will become the new desktop standard). But the real story here is the drive's mastery of data handling and throughput.

HDTach's sequential read test (which calculates the average data reading rate across a whole platter) coughed up a score of 55.1MB/s. Writing across an entire platter was equally impressive at 33.5MB/s. That's about 20 percent faster than yesterday's champ, the IBM Deskstar 180GXP! Would we like to use Raptors for desktop video editing? Yes, please.

In our custom-configured *IOMeter* desktop test, we thrash hard drives with so many random input/output operations, they usually puke and beg for mercy. The Raptor, however, finished with a score that was roughly 30 percent faster than the former record-holder. Of course, for a drive like the Raptor, our desktop I/O test is like a walk in the park—baby stuff. It's in our *IOMeter* web server test that the drive shows its best side. Dig the numbers: In the desktop I/O test, the IBM 180GXP hit 150 total I/Os, but dropped down to 143 total in the much more punishing server test. Meanwhile, Western Digital's Raptor nailed 190 total I/Os in the desktop test, then gained another nine during the server run! For this, we might want to thank the Raptor's 8.1ms random access time, which enables quick relocation of the drive head to the right data.

Would we like a Raptor in one of our modest little file servers? Yes, please.

There's just one catch: The Raptor's caching algorithm was never designed to tackle desktop work, so desktop drives like the 180GXP have a chance to "cache" up in many pedestrian desktop applications. *SYSmark2002* testing proves this point, as both the 180GXP and Raptor had identical scores of 166 in the more disk-intensive Office portion of this benchmark. The results left us concerned because the Raptor is fast. We even considered the possibility that our aging test bed was holding the Raptor back. Regardless, *SYSmark2002* does tell us something about how a faster hard drive affects real-world performance: Pedestrian desktop activities just don't hit your disk that often. That said, if you do more disk-intensive work than what's scripted in *SYSmark2002*, you will definitely see a speed jump. Video-editing, file-serving, and even game loading speeds should improve.

There are some other caveats when putting this server drive in your desktop rig. First, its capacity is limited to 36GB. Server storage usually consists of several drives conjoined in RAID, so smaller drives are preferred. Still, we don't mind the puny capacity. Thirty-six gigs seems perfect for a primary partition in a two-drive PC (you would just want a much larger secondary data drive). Second, the drive costs as much as a 160GB 7200rpm drive, pushing the MB-to-dollar ratio darn high. Not SCSI high, but still pricier than desktop IDE drives. The Raptor sports a five-year warranty, but we'd rather have a larger 10,000rpm drive with desktop optimizations, and a shorter warranty.

Go for the Raptor if the capacity doesn't bug you, you need break-neck speed, or have a reason to upgrade to SATA. This is the swiftest non-SCSI drive around. We just can't wait until WD comes up with a desktop-oriented version.

—BRIAN LAM

DARE TO COMPARE: HIGH-END HARD DRIVES

	WD360GD	IBM180GXP
SYSmark2002 Office	166	166
HDTach Average Sequential Read	55.1 MB/s	45.5 MB/s
HDTach Average Sequential Write	33.5 MB/s	27.7 MB/s
HDTach Random Access Time	8.1ms	13ms
IOMeter Desktop total I/Os per second	190	150
IOMeter Desktop average I/O response time	337ms	424ms
IOMeter Web Server total I/Os per second	199	143
IOMeter Web Server average I/O response time	5109ms	6181ms

Best scores are bold. For HDTach Random Access Time and IOMeter Average I/O Response Time, lower numbers are better. For all others benchmarks, the higher are better. All drives were tested in our zero-point system: a 2Ghz Pentium 4 with an Intel 850MV mobo and 512MB of PC800 RDRAM. The 180GXP interfaced with the onboard ATA100 controller, and the Raptor interfaced with a Silicon Image 3112A SATA card.

MAXIMUMPC VERDICT

360GD Raptor
WESTERN DIGITAL

+ BIRDS OF PREY
Fastest non-SCSI drive ever—with the benchmarks to prove it

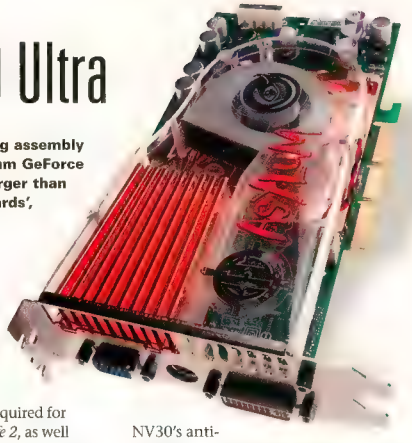
– STINKIN' PIGEONS
Expensive for a 36GB drive. Not tuned for the desktop.

www.wdc.com
$160

9

BFG Asylum GeForce FX 5800 Ultra

Not nVidia's finest moment



The FX Flow cooling assembly affixed to the Asylum GeForce FX 5800 Ultra is larger than many competing cards', and twice as loud!

Hundreds of thousands of words have been written about the GeForce FX 5800 Ultra—the videocard technology based on nVidia's NV30 core. Amid all the coverage, a number of specific words have kept cropping up: *loud, massive, ridiculous, Dustbuster,* and *leaf blower.* So let's get this out of the way early: The Asylum GeForce FX 5800 Ultra takes up two slots. The second slot is for a large, unwieldy cooling apparatus. When you turn on a game, the fan spins up. When the card's core cools off, the fan spins down. The fan is noticeably loud. You definitely hear it when it spins up, and you can't miss it spooling down.

The GeForce FX 5800 Ultra is nVidia's first 0.13-micron part. Its smaller die size—and ridiculously massive cooling solution—lets nVidia crank the core to 500MHz, a speed that is well beyond what ATI's 0.15-micron core is capable of. The Asylum sports 128MB of 128-bit DDR-II SDRAM. This gives the card a maximum theoretical memory bandwidth of about 16GB/s.

Like the ATI 9800 Pro, the FX also supports all the DirectX 9 features that will be required for *DOOM III* and *Half-Life 2*, as well as full floating-point 128-bit color. There's been some concern that the drivers we used for last month's reference board (version 42.63) use lower quality settings in order to improve benchmark performance. However, with the updated drivers that we used for the review on this page (version 42.69), we couldn't see any artifacting that would indicate visual quality finagling.

The card's performance was good, but not spectacular. Compared with cards based on the last nVidia chipset, the Ti 4600, the BFG Asylum scored significantly better in almost all of our benchmarks. Nonetheless, the latest nVidia effort is only a bit faster than the ATI Radeon 9700 Pro in some tests, and is spanked by the Radeon 9800 Pro pretty much across the board. It just doesn't reach ATI's latest bar.

That said, the BFG Asylum is certainly capable of running all of today's games at high resolutions and competitive frame rates. Alternately, if you want to run games like *Quake III* and *Unreal Tournament 2003* with all their eye candy goodies enabled, you can do so and still maintain frame rates above 60fps. You'll just have to choose slightly lower resolutions (like 1024x768 on a 3GHz P4).

The Asylum includes both DVI and a DB-15 outputs, as well as an S-Video output. Unfortunately, there isn't yet an add-on to let you connect your nVidia card to an HDTV yet. We're also a little disappointed by the quality of the NV30's anti-aliasing. As the straight edges that are prone to aliasing begin to approach horizontal, the amount of AA being done to them seems to taper off considerably.

But the real problem with this card isn't performance or image quality. It's availability. Pre-order options have been removed from participating web retailers, and no computer stores in the San Francisco Bay Area had received shipments by the time we were going to press. Our BFGTech rep said all the pre-orders had shipped, but did not give an ETA for retail boards.

The BFGTech card is representative of all the GeForce FX 5800 Ultra boards that will be on store shelves when you read this. The sad news is that this card is neither as fast, nor as well-mannered as the Radeon 9800 Pro. If only the fastest will do, the GeForce FX 5800 Ultra isn't right for you.

—WILL SMITH

THE SPECS

Core type	nVidia NV30
Core clock	500MHz
Core process	0.13-micron
Memory type	128-bit DDR II
Memory size	128MB
Memory speed	500MHz

BENCHMARKS

	NO AA /NO ANISO	4X AA /8X ANISO
3DMark2003 Default	4419	2098
3DMark2003 Game 2	28.9	10.9
3DMark2003 Game 4	33.4	16.5
Quake3 MPC Demo	138.2	51.5
Serious Sam – Valley Demo	28.9	21.7
UT2003 Flyby	113.0	33.9
UT2003 Botmatch	64.8	23.0

All benchmarks are run in a Pentium 4 3.06GHz machine with 512MB of RAM. All benchmarks are run at 1600x1200 in 32-bit color, except for the three 3DMark benchmarks, which are run at their default resolution, 1024x768. Benchmarks were run using the 42.69 driver.

TESTING IMAGE QUALITY

There's been much recent controversy regarding the testing of the anisotropic filtering used by ATI and nVidia—each company offers 8x aniso with trilinear filtering enabled, but with different implementations. Let it be known, for all of our high-quality benchmark settings, we turn on 4x AA, 8x anisotropic filtering, and trilinear filtering. To enable these settings with the GeForce FX chipset, we set the AA and aniso settings in the Image Quality tab of the nVidia control panel, then set the Performance slider to Balanced. We'll discuss the visual quality controversy further in next month's "Videocard Answers" cover story.

MAXIMUM PC VERDICT

BFG Asylum GeForce FX 5800 Ultra
BFGTECH

+ DODGE VIPER
It's pretty fast, and it didn't make our PC explode.

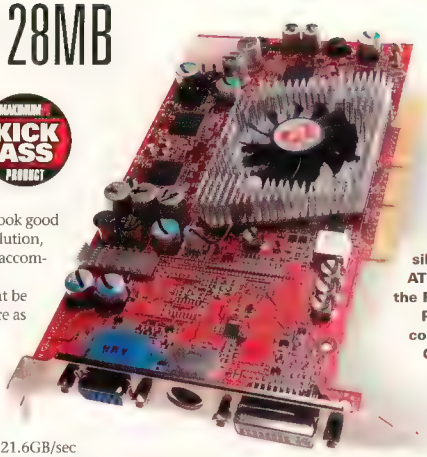
– DMC DELOREAN
It's not as fast as the Radeon 9800 Pro, it's loud, and it takes up both your AGP slot and the adjacent PCI slot

www.abspc.com
$400

7

ATI Radeon 9800 Pro 128MB

The latest Radeon "effects" a decisive victory



The delicate silver heatsink ATI is using for the Radeon 9800 Pro is a stark contrast to the GeForce FX's two-slot behemoth.

Last month, we tested a final production Radeon 9800 Pro with drivers that weren't quite ready for prime time. This month, we review the final shipping retail board and drivers—and the results are remarkably similar to the reference package. The 9800 Pro's R350 core runs at 378MHz on a 0.15-micron process, and its 128MB of 256-bit DDR SDRAM runs at 338MHz (a 256MB version of the card is coming). Like the Radeon 9700—which was based on the R300 core—the 9800 Pro is a fully compliant DirectX 9 3D accelerator.

The Radeon 9800's 8-pixel pipelines and 21.6GB/s of raw memory bandwidth don't just help the card excel at today's 3D applications. No, the 9800's programmable shaders are fully compliant with both of the DirectX 9 programmable shader specs, and this ensures future game compatibility. That's right, you'll be able to play all the fancy next-gen games—such as *DOOM III* and *Half-Life 2*—with all their hoity-toity shader effects enabled. Prepare yourself for bump-mapped everything, gratuitous use of reflective surfaces, and volumetric shadows for every single model. You'll also have complete support for full 128-bit floating point color, which helps minimize artifacts caused by rounding errors and the imprecision that results when blending integer-based colors.

Like all well-behaved 3D accelerators, the 9800 Pro sports both a DB-15 analog VGA jack and a DVI interface suitable for flat-panels. The 9800 Pro also includes a couple of TV-output options—a standard S-Video out, and a component output option suitable for use with HDTVs.

Hands down, the nicest thing about the 9800 Pro is that you can run most of today's games with all their detail settings cranked to the max. This means anti-aliasing, anisotropic filtering, and texture quality fully enabled even at high resolutions, such as 1280x1024. The hardest of the hardcore may live and die by the frame rate, but we like our games to look good and run at a high resolution, and a 9800 Pro board accomplishes that.

The 9800 Pro might be based on the same core as the 9700 Pro, but ATI added two key enhancements. First, the memory controller has been optimized to better take advantage of the 21.6GB/sec of raw memory bandwidth. Second, in order to facilitate massive shader programs, the 9800 Pro includes a FIFO buffer. This "F-buffer" will let developers write very long programs and run them without any special modifications. In fact, using the F-buffer, developers and CGI artists can run extremely complex shader programs—like Pixar lighting programs—that previously required large render farms hours to draw. All in near-real-time, on their own PCs. This is the first step toward giving 3D game developers the exact same tools that were used to create modern animated movies like *Shrek*.

As for pure, raw performance across a wide range of resolutions and visual quality settings, the 9800 Pro is faster than the GeForce FX in most benchmarks, but not by a huge margin. The real differences between the 9800 Pro and FX are their respective sizes (the FX and its cooling apparatus take up two slots) and noise output (the Radeon uses a standard cooler that's much quieter than the FX's). Right now, the Radeon 9800 Pro is the fastest and most highly finessed 3D accelerator you can buy.

—WILL SMITH

THE SPECS

Core type	ATI R350
Core clock	378MHz
Core process	0.15 micron
Memory type	256-bit DDR
Memory size	128MB
Memory speed	338MHz

TESTING IMAGE QUALITY

There's been much recent controversy regarding the testing of the anisotropic filtering used by ATI and nVidia—each company offers 8x aniso with trilinear filtering enabled, but with different implementations. Let it be known, for all our high-quality benchmark settings, we turn on 4x AA, 8x anisotropic filtering, and trilinear filtering. To enable this with the Radeon 9800, we select the Quality setting in the control panel. We'll discuss the visual quality controversy further in next month's "Videocard Answers" cover story.

BENCHMARKS

	NO AA/NO ANISO	4X AA/8X
3DMark2003 Default	5532	2655
3DMark2003 Game 2	36.1	13.0
3DMark2003 Game 4	32.6	22.1
Quake3 MPC Demo	147.5	82.1
Serious Sam – Valley Demo	40.2	34.1
UT2003 Flyby	135.3	75.9
UT2003 Botmatch	71.4	47.0

All benchmarks are run in a Pentium 4 3.06GHz machine with 512MB of RAM. All benchmarks are run at 1600x1200 in 32-bit color, except for the three *3DMark* benchmarks, which are run at their default resolution, 1024x768. Benchmarks were run using the Catalyst 3.1 driver

MAXIMUM PC VERDICT

Radeon 9800 Pro
ATI

DR. PEPPER

It's the fastest card money can buy, it doesn't overlap into any neighboring slots, and it's quiet

PRUNE JUICE

No TV and remote-control features of the All-in-Wonder 9700, and it could use another 128MB of memory—sooner rather than later.

www.ati.com

$400

9

Antec LANBOY

The case of choice for LAN party marauders

Close your eyes, take ahold of the included carry strap, and you'll think the feather-light LANBOY is your grade school lunchbox.

Imagine a post-apocalyptic nightmare. All cities have been destroyed, broadband no longer exists, and only geeks hardened by years of exposure to CRT radiation have survived the nuclear fallout. Tribes of nomadic nerds are all that's left of the former superpowers, and all conflict is settled by keyboard-to-keyboard multiplayer warfare. In this harsh environment, PCs need to do double duty as main desktop rigs and portable LAN party boxes. Enter the LANBOY, which offers a cunning mix of practicality and aggression.

Four 5.25-inch railed drive bays and two 3.5-inch external bays hide behind a plastic, faux-silver door. The case also features two internal 3.5-inch bays, but we see them getting toasty because the 3.5-inch cage doesn't support a fan. The rest of the cooling configuration is minimal. There's room for a single 80mm fan in front, and another in the rear exhaust position. For pimp and swagger, the LANBOY includes a 350-watt SmartBlue LED power supply, which casts a nice glow off of your components when viewed through the included case window. Two front-mounted USB ports put to rest any notion that the LANBOY is a barren package.

The LANBOY might be polished and feature-laden, but it's no hog. Standing at 17 inches high, the full-featured case doesn't take up much room. And for those frag-fest showdowns, the LANBOY's light aluminum construction allows for swift deployment, especially when you use the included case carrier.

Unfortunately, the LANBOY's weight-saving design sacrifices the sturdiness of a hefty steel case. The mobo tray isn't removable, but we loved the included screw compartment—super-handy when swapping hardware in the field. We also dig the locking tray cover, which keeps unauthorized swapping from occurring at all. (Post-apocalyptic padlock not included.)

—BRIAN LAM

MAD MAX: Not too big, not too small, full of trick features.
WHATEVER THE THIRD MOVIE WAS CALLED: Not the sturdiest case we've ever sat on.

MAXIMUM PC VERDICT: 9

$100 (350-watt SmartBlue PSU included), www.antec-inc.com

Wahoo Chilli Pro

The devil's case, with an angelic face

You'll be as blue as the Chilli when you find out what a nightmare it is to work with.

The Wahoo Chilli Pro is a tempting case. The top and side panels—made from sultry pieces of quarter-inch thick, blue-anodized aluminum—look as if they were crafted by the hands of an angel. The PSU is mounted in the bottom of the case (where temperatures are cooler), and the motherboard follows suit with an upside-down orientation, so your CPU is located at the bottom of the case as well. The mini-ATX enclosure itself is small, solid, and fairly innocuous.

It all sounds dandy, but once you pull back the Chilli's beautiful shell, you'll expose more than one level of case-design hell.

The first level of hell is reserved for torturing people who need frequent interior access: To install or remove a drive, no fewer than 16 screws (eight on each side) need to be removed. And if that weren't enough, the screws are hex screws. Even the hardiest, most resilient case-modders will probably stab themselves with a hex wrench after dealing with just a few of the infernal fasteners.

The next level of hell takes care of anyone who's accustomed to using sturdy drive cages with smooth edges. Unlike the inviting aluminum castings on the outer portion of the Chilli case, the flimsy drive bays within promise more digit slicing than a poorly supervised wood shop. While working on the two 5.25-inch bays and four 3.5-inch bays, you might be better off wearing gloves.

The final level of hell is the most heinous. The first five aluminum panels of the Chilli inspire hope, but the cheap plastic bottom panel (the *sixth* panel) is a piece of junk. It flexes and guffaws under the slightest pressure, causing us to doubt the case's overall integrity. Furthermore, the placement of the CPU near the bottom panel's cooling vent seems like a blessing—until you realize that the power supply sits too close to the CPU, and prohibits the mounting of an extra large heatsink to squelch your processor's heat.

This almost-overwhelmingly attractive case might seduce fanatics who want to show off at LAN parties. But if you plan on living in your box, working on it every day, you should heed our warning: All hope abandon, ye who mounts computer hardware in the Chilli Pro.

—BRIAN LAM

HOT CHILI PEPPERS: Amazing aluminum craft work.
CHILI CHEESE DOG: 16 hex screws required to access drive bay, too many sharp edges, and a flimsy bottom.

MAXIMUM PC VERDICT: 5

$190 (no power supply), www.wahoocomputers.com

MSI 52/24/52 CD Burner

Mobo manufacturer says: Let 'er rip!

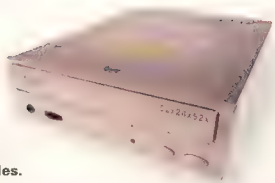
There was once a time when we didn't think CD burning would increase beyond 48x. But then again, there was also a time when we never imagined that a TV show featuring people eating animal testicles would be a hit. We're still not crazy about testicle consumption, but we're pleased that MSI, having thrown its hat into the optical arena, managed to shave off time from our current CD burning records. The MSI 52x also whipped out digitized tracks from audio CDs in just slightly more than two minutes—2:05 to rip more than 70 minutes of music without any flaws, to be exact.

We're duly impressed. And although it's splitting hairs, the MSI 52x burned a 700MB disc in 2:35, exactly one second faster than the TDK 52x. Future firmware revisions might be able to lower MSI's time even further, as the last 25 seconds of our 2:35 burn was devoted to writing the lead-out (as reported by *Nero*), which is fairly long for this finishing process. MSI's CD-RW writes tied with Plextor's fastest PlexWriter at 3:47.

Physically, the MSI drive is about a quarter-inch shorter than both the 48x PlexWriter and the 52x Lite-On. This might not sound like much unless you're trying to cram an optical drive into a petite Shuttle case. And the Play/Skip button on the front of the drive is a nostalgic touch. Using the skip button caused an audible blip between tracks, but we won't make a big deal over a button that few people will ever use.

BENCHMARKS	
Average data transfer (MB/sec)	5.8
Average drive rating	31 /x
Random/full-stroke seek (ms)	90/154
Audio extraction (min:sec)	2:05
Data CD burn (min:sec)	2:35
CPU utilization (at 8x)	5%

The audio extraction test uses a commercially stamped 70:07 minute audio CD. The data CD burn test uses the bundled applications to create a 700MB CD-R. All tests were performed using Verbatim media, except where indicated.



Our Art Director, Natalie Jeday, can hold her breath longer than it takes the MSI 52x burner to rip a 70-minute plus CD. We really do live in a world of miracles.

The MSI 52x is not the quietest drive we've ever tested, nor is it the loudest. Going at full-bore read speed, the drive emitted a fairly prominent low-frequency sound. But while playing an audio CD (which spins at 1x), we couldn't hear the drive at all.

We still prefer the dramatically lower seek times of the PlexWriter 48x (60ms for a random seek, as opposed to the still-impressive 90ms of the MSI 52x). That said, it is nice to shave a few seconds on each full-disc burn. Thus, the record-busting MSI 52x is our new budget favorite.

RIPPING: MSI hits the ground running with a furiously fast drive that breaks the record in digital audio extraction.

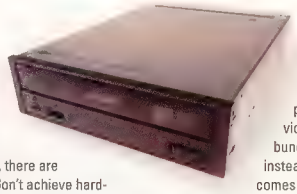
SKIPPING: Plextor is still the leader in access times. The drive has a very audible buzz at high speeds, and doesn't bundle an IDE cable.

—LOGAN DECKER

MAXIMUM PC VERDICT: 9

TDK's indiDVD DVD Burner

The B-movie burner



Writes to:	
DVD-R	4x
CD-R	16x
Rewrites to:	
DVD+RW	2.4x
CD-RW	10x
Reads:	
DVD-ROM	12x
CD-ROM	40x

Let's get one thing straight: We may be hardware enthusiasts, but we're not snobs. Just like there are some movies we enjoy even though they're less than transcendent experiences, there are products that capture our fancy even though they don't achieve hardware nirvana. Take for example TDK's first recordable DVD drive, the indiDVD.

Shortcomings that might vex consumers in another product aren't likely to hurt the indiDVD's popularity. Not with the excellent, jargon-free documentation covering both the hardware and the software. Not with a Flash presentation covering every aspect of installation, from opening your case to setting the jumpers. And even the fuzzy monster on the box somehow manages to convey the idea that the whole idea of buying a personal DVD burner is about having *fun*.

The indiDVD burns to DVD+R at 4x—the fastest rate available—and it set a new record filling up a whole DVD in just less than 14 minutes. But overall, its performance—from seek times to CPU utilization—was just slightly above average. Audio extraction proved to be the most difficult chore for the indiDVD. Its digital audio extraction peaked at just under 30x, for a best time of 4:19. That's not awful, but it had a difficult time ripping at the extremities of long-length CDs, slowing down to single-digit speed, and sometimes skipping the last track altogether.

BENCHMARKS	DVD	CD
Average data transfer (MB/sec)	9.3	4.5
Random/full-stroke seek (ms)	118/197	112/173
Audio extraction (min:sec)	-	4:19
Data burn (min:sec)	13.58	5.29
CPU utilization	21% (2x)	8% (8x)

The data CD burn test uses the bundled applications to create a 647MB CD-R. The data DVD burn test uses the bundled applications to create a 4.25GB. The audio extraction test uses a commercially stamped 70:07 minute audio CD. All tests were performed using Verbatim media, except where noted.

As the name suggests, TDK is pushing its burner toward the digital video crowd. To that end, the burner is bundled with Pinnacle's *Studio SE 8.5* instead of Sonic's *MyDVD 4.0*, which comes with nearly every other recordable DVD drive. While *Studio SE 8.5* has a vastly more capable video-editing engine than *MyDVD 4.0*, it lacks the ease of use of the latter, and can't come close to *MyDVD* for making spectacular multimedia backgrounds. Even worse, you don't find out that some features aren't included in this "SE" version until you click on them and are met with an advertisement to upgrade to the full edition. Weak

No casual user would be disappointed in this drive, especially those people who are just dipping their toes into digital video and don't already own an editing app. But indiDVD lacks the swift reading transfer rate of Pioneer's A05, and doesn't offer the dual-format capability of Sony's DRU-500A. (Sony's latest iteration, the DRU-500AX, also burns at 4x to DVD+R.) And we miss Sonic's ace *MyDVD 4.0*. But then again, those other products don't have fuzzy monsters on their boxes.

BABIES: If you read the documentation and still have a hard time operating the drive, then, yes, it's you. It beat Pioneer's DVR-A05 by more than 45 seconds burning a full DVD.

RABIES: In order to climb to the top, the indiDVD needs lower CPU utilization, faster CD burning, and much better audio extraction. And dual-format support wouldn't hurt, either.

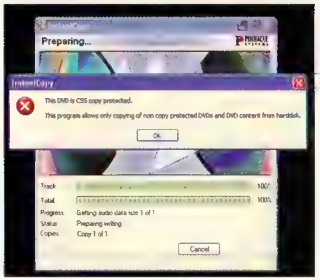
—LOGAN DECKER

MAXIMUM PC VERDICT: 8

$300, www.tdk.com

Instant Copy

Arhhh. This be no utility for software pirates, matey



Do'h! But the box said it would copy a DVD!

The sexy box copy is sure to sell a lot of software: "Copy a 9GB DVD onto one 4.7GB DVD… Make perfect copies of your CDs and DVDs." Sounds sweet, right? But when you read the *Instant Copy* packaging a bit more closely, you'll find an advisory that'll stop you dead in your tracks: "Except copy-protected DVDs/CDs."

Now, that's a fine hidey-hoe.

Why would anyone even want this app? For all the non-copyrighted DVD content that Pinnacle thinks you're dying to copy? Hah!

We suspect Pinnacle is playing the old "switchblade kit" trick. You know the deal: You can't legally buy a switchblade 'round these parts, but you might be able to get your hands on a switchblade kit—thus the law gets broken only when you put all the parts together. In the case of Pinnacle's *Instant Copy*, you can in fact make duplicates of copy-protected discs. You'll just need help from an illegal third-party app such as *DVD Decrypter*. Using that program, you can strip the copy-protection from a DVD, which would put you in breach of the law.

With either a ripped movie or a non-protected DVD, *Instant Copy* is pretty handy. You can use it to transcode a dual-layer disc onto a single disc (DVD-R, -RW, +R, +RW, or RAM), or burn it to Super VCD or VCD. The transcoding that Pinnacle uses is good but not great. It produces an image quality that's far better than that of VCD, and definitely better than Super VCD. The transcoding quality can also improve depending on how many features you want to delete from a DVD movie disc, and *Instant Copy* makes it easy to strip out options you won't use (such as subtitles and audio tracks). The app is a serious CPU hog. On both a 2.8GHz P4 machine and a dual-CPU Athlon MP box, the transcoding process took hours, making us think the word "instant" should've been left out of the product name.

If you're looking for one-shot DVD copying, it makes more sense to invest in *DVDXCopy*, which does exactly as it promises: It copies many DVD movies (albeit to two discs). *Instant Copy*, meanwhile, is only half of what you'll need to burn movies.

That said, if you're happy with *Instant Copy's* limited feature set, then it's actually a good deal for the low price of $49. Anyone serious about backing up a DVD collection should probably include both *Instant Copy* and *DVDXCopy* in his or her arsenal. DVD-duping software clearly faces some legal and technical hurdles, but at least it's evolving.

Oddly, while *Instant Copy* will refuse to copy a DVD movie, it copied a copyrighted audio disc without a hiccup. The interface is professional and straightforward, which is always a plus.

—GORDON MAH UNG

ANYTHING: Copies up to 9GB onto a single 4.7GB DVD; good image quality; and professional interface.

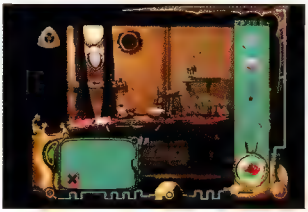
GRAPE NUTS: Cannot in and of itself duplicate copy-protected material, and to call the product *Instant*-anything is a bit misleading.

MAXIMUM PC VERDICT: 8

$49, www.pinnaclesys.com

Chemicus

Or should we say, *CheMyst*



Rather than encouraging dangerous lab habits like sniffing or tasting, *Chemicus* provides you with a handy loupe-like device that identifies the chemical composition of the objects you come in contact with.

Guess what happened to Richard the other day? The big doofus discovered how to enter a parallel world wherein the culture is entirely based on the principles of chemistry. Sadly, its inhabitants quickly accused him of stealing a crucial "transmission molecule" and disturbing the balance between our two worlds. They're steaming mad and *this close* to beating the crap out of him to get it back, so you have to follow Richard into *Chemicus*, find (or reproduce) the missing molecule, and defuse a tense situation.

Just like *Myst*, *Chemicus* is a first-person slideshow adventure game primarily made up of a series of achingly beautiful but largely static environments. The unique aspect of *Chemicus* is that the puzzles, for the most part, rely on actual chemical principles. We're not talking about making rock candy or using litmus strips here, folks. You start out simple with electrolysis, and eventually graduate to electroplating, redox reactions, all the way to mass spectroscopy. If you're stumped, or if you don't know what raw materials you'll need to forge, say, your own steel gear shaft, you can consult the in-game knowledge base by pressing a button at the bottom of the screen. There you'll find seven chapters covering what in a textbook would be called "The Amazing World of Chemistry." In the hyperlinked text of this primer, you'll find every chemical principle, diagram, and instruction necessary to complete the game. But if you'd rather have your arms torn off than learn something, you can always refer to the walk-through included on the CD.

Unfortunately, *Chemicus* suffers from several Deadly Gaming Sins. The resolution is 640x480, and much of that pitifully small real estate is taken up by the interface. Objects don't highlight where they can be used, so you'll end up waving a handful of quicklime around trying to find a "hotspot" in vain. And despite a full install, the in-game cinematics and some animations still stream from the CD. Still, most people are more likely to be put off by the unmistakable whiff of edutainment, a classification that ranks just below syphilis in terms of desirability. But *Chemicus* is in fact more game than it is education; you could easily complete it stumbling around like a drunk using just trial and error. But it's pointless to play the game without some innate curiosity about chemistry—it becomes just a dull, albeit good-looking, *Myst* clone. That's what makes *Chemicus* such a unique experience that might easily fly underneath a gamer's radar—the greater your curiosity about chemistry, the more fun you'll have.

—LOGAN DECKER

THE CHEMICAL BROTHERS: We had no idea that we could have so much fun without guns!

THE SMOTHERS BROTHERS: 640x480? Was the game intended to be played on a handheld?

MAXIMUM PC VERDICT: 7

$20, www.tivola.com

Unreal II

Another ho-hum bug hunt

Skaarj are back, doing a kind of tumble-tot zig-zagging routine as they run towards you for a rather effective bit of disemboweling.

Spiders! It's full of spiders! There's a rule about spiders in games: They are the designer's way of saying: "I give up. I have run out of ideas."

Strangely, that feeling permeates all of *Unreal II: The Awakening*, a game so eagerly anticipated that even the editors at *Maximum PC* were quivering like hummingbirds as they anxiously awaited a copy. Sadly, now, after having actually played the game, their hummingbird wings have slowed to a dead stop. "We waited for this?" is the question on everyone's lips.

Unreal II has an amazing degree of polish. It's slick, it's gorgeous, and it has one or two breakout moments. But our sustained impression over the course of a meager 12-odd hours of gameplay is one of profound familiarity and undeniable disappointment. *Unreal II* is not, by any stretch of the imagination, a bad game. It is, however, a crushingly unsatisfying one.

So how can a "not bad game" warrant a mere 6 verdict? The problem lies in a burden of expectations, and while Epic/Legend may cry foul, this burden is the inevitable byproduct of five-odd years of unrelenting hype. The first *Unreal* was a watershed title. When gamers emerged into that open space, with the waterfall in the distance and the critters hopping about, they entered a new era in gaming. That the rest of *Unreal* never quite lived up to the first scene's promise—that it resorted to standard run-n-gun clichés—was never that big a problem. It was good, old-school action gaming. It pulled the plow.

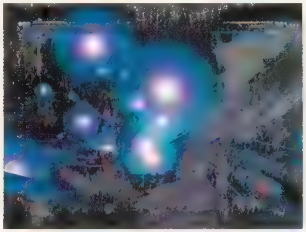
Unreal II is sort of like the first game, but without the shock value of the waterfall. We already know how good games can look. But we also expect more from our action games in the wake of many clever, well-scripted titles (quite a few of which were made using the original *Unreal* engine). The really odd thing about *Unreal II* is that its meager narrative was created by a team of people with proven track records. The script is by Bob Bates, president of Legend and standard-bearer for the puzzle adventure game. The co-designers are Glen Dahlgren and Mike Verdu, whose *Wheel of Time* is one of the neglected masterpieces of late-1990s action gaming: It's got more interesting events, people, locations, and content in a single level than you'll find in all of *Unreal II*.

All of this makes *Unreal II* dreadfully difficult to evaluate. Nothing in it immediately reeks. Everything looks good. There are plenty of enemies. The pacing is decent. The levels are mostly good, but none stand out as classics. The weapons are almost pathologically generic: pistol, assault rifle, shotgun, rocket launcher, grenade launcher, flame-thrower, big gun, sniper rifle, and shock lance. Seriously: a shock lance? Please. That's just so... 1993. All of these weapons are perfectly functional and effectively animated, but they bring nothing to the table but old memories. Probably the weakest element of the game is the flaccid monster design, which ranges from seen-it (the skarrj) to what-is-it? Plus, there are those spiders. *Grrrr.*

But perhaps the most catastrophic failing of *Unreal II* is its almost nonexistent shelf life. Not only is it short, but it has no multiplayer component whatsoever, guaranteeing it a quick trip through Add/Remove Programs once the final curtain falls on the main mission. There are no skirmish levels, no nuthin'. Dividing the franchise into *Unreal* and *Unreal Tournament* may have seemed like a good idea at the time, but removing all multiplay from *Unreal II* was a fatal error. A game lives on between versions because of multiplayer. Take that away, and a game is DOA. It also leaves you feeling pretty ripped off, since for $50 you get very little.

For all its beauty and accomplishment, *Unreal II* is ultimately an empty game, coasting on its reputation rather than expanding the genre. It's enjoyable enough, but it will never be mistaken for a great game.

—THOMAS L. MCDONALD



One of the game's better moments is a standoff in which you and three marines protect a landing zone from monsters pouring out of the dark.

MAXIMUMPC VERDICT

Unreal II
INFOGRAMES

+ ORIGINALS
Stunning 3D engine. Solid, familiar run-n-gun action

– SEQUELS
Short play time. Little in it is fresh or interesting. Levels, weapons, and creatures are average—which is unacceptable for a game of this magnitude

www.infogrames.com
$50

6

HardDrive.com

Your Storage Resource

We are the largest source for Color Components

We stock thousands of Computer Products

Sales Line: 800-400-3499

Why Buy A System From HardDrive.com

Totally Customizable: We build the system to your needs, we specialize in all case mods and cooling accessories.
Trained Sales Team: We will walk you through every step of choosing the right components for your perfect PC.
Certified Technicians: Your system will be professionally built by certified technicians with years of experience.
Warranty: All components in your system will receive their full manufacturer's warranty
Support: Lifetime technical support is just a toll free call away.

Ready for Deployment in 3.....2.....1.....

Raptor DV1000

Cooler Master 101B Aluminum Case w/ Window
SuperMicro 400w Dual Xeon Power Supply
SuperMicro X5DAE Dual Xeon 8X AGP, 533MHz, 64bit PCI Mobo
Intel® Pentium® 4 Dual Xeon Processors
3 Ware Escalade 4Port Serial ATA 150MB/sec RAID Card
2 Seagate 120GB Serial ATA 150 Mbytes/sec, Raid 0
ATI Radeon 9700 Pro 128MB Video Card
3GB PC-2100 DDR Memory
Silver Sound Blaster Audigy 2 Platinum w/ Live Drive
Silver Sony DRU500AX DVD+/+R/CDR/RW Drive
Silver Sony 16X/40X DVD Rom Drive
Siver Iomega 750MB Zip Drive, Silver Floppy Drive
Silver Rounded cables, Red Hot Pluggable SATA Cables
Windows XP Professional
Canopus JD-1 Digital Editing Joystick
DVStorm2 Imagination Bundle, includes DVS2,Storm Bay, Imaginate, Photo Album, Xplode Pro, & Premier 6.5
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

$6,761

Intel® Pentium® 4 Xeon 2.0 GHz	$6,761
Intel® Pentium® 4 Xeon 2.2 GHz	$6,783
Intel® Pentium® 4 Xeon 2.4 GHz	$6,791
Intel® Pentium® 4 Xeon 2.6 GHz	$6,935
Intel® Pentium® 4 Xeon 2.8 GHz	$7,299

The Pit Bull

HardDrive.com Blue Aluminum Case w/ Window
Antec True Blue 480watt Power Supply
Intel® e7205 Chipset, 533MHz FSB Motherboard
Intel® Pentium® 4 533MHz FSB Processor
2 Seagate 120GB Serial ATA 150 Mbytes/sec, Raid 0
NVIDIA GeForce4 Ti4600 128MB 8x AGP Video Card
512Mb PC-2100 DDR Memory
10/100 Ethernet
Blue Sound Blaster Audigy 2 Platinum w/ Live Drive
Blue 52x24x48 CDRW Drive
Blue 16X/40X DVD Rom Drive
Blue 1.44Mb Floppy
Blue Rounded cables, Red Hot Pluggable SATA Cables
Windows XP Professional
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

Logitech Z680 5.1 Sound System
Sold Seperatly - $288

$2,441

Intel® Pentium® 4	2.0 GHz	400Mhz	$2,441
Intel® Pentium® 4	2.4 GHz	533Mhz	$2,449
Intel® Pentium® 4	2.53 GHz	533Mhz	$2,481
Intel® Pentium® 4	2.66 GHz	533Mhz	$2,483
Intel® Pentium® 4	2.8 GHz	533Mhz	$2,563
Intel® Pentium® 4	3.06 GHz	533Mhz	$2,736

Tomcat

Lite-On Black & Silver ATX Case
300 Watt P4 Ready Power Supply
Iwill P4 ATA/100 400 Mhz, USB2, LAN, Mobtherboard
Intel® Celeron® 1.7GHz Socket 478 128k 400Mhz CPU
Seagate 80GB Barracuda IV Ultra ATA/100 Hard Drive
Intel® Extreme Graphics Video
512Mb PC-2100 DDR Memory
Creative Labs 56k V.92 PCI Modem
10/100 Ethernet
Black 52x24x52 CDRW Drive
Black 16X/40X DVD Rom Drive
Black 1.44Mb Floppy
Windows XP Professional
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

$840

Intel® Celeron®	1.7 GHz	400Mhz	$849
Intel® Celeron®	1.8 GHz	400Mhz	$857
Intel® Celeron®	2.0 GHz	400Mhz	$863
Intel® Celeron®	2.1 GHz	400Mhz	$873
Intel® Celeron®	2.2 GHz	400Mhz	$876
Intel® Celeron®	2.3 GHz	400Mhz	$885
Intel® Celeron®	2.4 GHz	400Mhz	$901

Dark Knight

HardDrive.com Black Hydraulic Case w/ Front USB
300 Watt P4 Ready Power Supply
Asus A7V8X Socket A KT400 AGP 8X, LAN, USB 2.0 Mobo
AMD XP 2000+ 333Mhz FSB
Seagate 120GB ATA/100 Hard Drive
NVIDIA GeForce4 Ti4600 128MB 8x AGP Video Card
Kingston DDR 400 PC3200 512MB Memory
10/100 Ethernet
Creative Labs Sound Blaster Audigy 2
Black 52x24x48 CDRW Drive
Black 16X/40X DVD Rom Drive
Black 1.44Mb Floppy
Black Rounded cables
Windows XP Professional
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

$1,301

AMD Athlon 2000+	266Mhz	$1391
AMD Athlon 2100+	266Mhz	$1402
AMD Athlon 2200+	266Mhz	$1413
AMD Athlon 2400+	266Mhz	$1448
AMD Athlon 2700+	333Mhz	$1482
AMD Athlon 2600+	333Mhz	$1552
AMD Athlon 2800+	333Mhz	$1704
AMD Athlon 3000+	333Mhz	$1931

Stallion

HardDrive.com Black Hydraulic Case w/ Front USB
300 Watt P4 Ready Power Supply
Matsonic Socket A ATA/100 Audio, LAN, & Video Motherboard
AMD XP 1600+ 266Mhz FSB
Seagate 40GB ATA/100 Hard Drive
AC97 Digital Audio
512 Mb PC133 Memory
10/100 Ethernet
Black 52x24x48 CDRW Drive
Black 16X/40X DVD Rom Drive
Black 1.44Mb Floppy
Black 1280x1024 .24mm CRT Monitor
Black Keyboard and Mouse
Black Speakers
Windows XP Professional
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

$930

AMD Athlon 1800+		266Mhz	$839
AMD Athlon 2000+		266Mhz	$859

Enjoy the Sounds of Surround Logitech 4.1 Surround System **$98**

MK3 G1000

Silver SB51G Shuttle PC Case
200 Watt Power Supply
SB51 Small Form Factor 1 PCI, 1AGP
Intel® Pentium® 4 2.4 GHz 533 FSB Processor
512 Mb DDR PC2100 Memory
Seagate 120GB ATA/100 Hard Drive
AC97 5.1 channel Support Digital SPDIF In/Out Audio
ATI Radeon 9700 Pro 128Mb w/TV Out, DVI Video Card
Silver 48x24x48 CDRW 16x DVD Combo Drive
Front USB 2, Line-out/Headphone, MIC, 1394, SPDIF
Back Serial Ports, 1394, USB, LAN 1
Hyper Threading support
Shuttle I.C.E. heat-pipe technology
Windows XP Professional
Built by KickAssGaming PC Certified Technicians
FREE Lifetime Technical Support

$1302

Intel® Pentium® 4	2.4 GHz	533Mhz	$1,392
Intel® Pentium® 4	2.53 GHz	533Mhz	$1,424
Intel® Pentium® 4	2.66 GHz	533Mhz	$1,426
Intel® Pentium® 4	2.8 GHz	533Mhz	$1,506
Intel® Pentium® 4	3.06 GHz	533Mhz	$1,666

Iomega External

120GB Capacity 7200RPM USB 2.0 Serial Ata Hard Drive, USB2 cord, Interface module, Power cord and quick installation guide.
$240
3/2/04
One Year Warranty.

Want To Build A Custom PC But Need A Little Help ? Call Us !!
Our Sales team can guide you into the PC Of Your Dreams
Custom Build A Center Steps 1-9
So You Want Us to Build It!
$25

Windows XP Home Ed. OEM $109
Windows XP Professional Ed. OEM $149
So You Want Us to Load Your OS?
$45

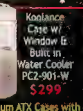
Acer Centrino

TravelMate 803LCi
Pentium M 1.8GHz Centrino
512Mb Memory
80 GB HardDrive
DVD-CDRW
ATI Mobility Radeon 9000
Windows XP Pro
15" SXGA+ Screen
Total Wireless Technology
$2850

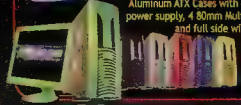
Cases Step 1

Xiser III Case w/ Window Y1000D
$179

Koolance Case w/ Window & Built in Water Cooler PC2-901-W
$299



Enermax Aluminum Cases w/ Window
$379



Aluminum ATX Cases with 420watt P4/AMD power supply, 4 80mm Multi Color LED fans, and full side window.
Special
$145

Motherboards Step 2

SOCKET 478 (Pentium 4)

Asus		$235		$114
	P4B533VLAN	$142	P4T533	$168
	P4T533-C/LAN	$164	P4GEV	$142
	P4PELANVAY	$116	P4PELFWSR	$142
Gigabyte	GA8INXP Quantum	$239	GA8PE667U	$134
	GA8IHXP2	$171	GA7VAX	$92
	GA8INXP1394	$219	GA8IR533	$85
Iwill	MP4GL	$90	MP4G	$105
	P4ES	$100	P4R533N	$135
	P4G	$102	P4GS	$105
MSI	845EMAX	$85	MS9126010	$196
	GN8MAX-FISR	$233	845GVM-L	$79
Intel	D845PESV	$102	D845VAD2	$93
	D850EMVR	$150	D50EMVRL	$166

Processors Step 3

Celeron 2.1 GHz 128 cache		$90
Celeron 2.2 GHz 128 cache		$93
Celeron 2.3 GHz 128 cache		$102
Celeron 2.4 GHz 128 cache		$118
Xeon	2.0GHz 512 cache	$223
Xeon	2.4GHz 512 cache	$237
Xeon	2.66GHz 512 Cache	$312
Xeon	3.8GHz 512 cache	$489
P4	2.4GHz 512k 533	$188
P4	2.4GHz 512k 800	$205
P4	2.53GHz 512k 533	$214
P4	2.66GHz 512k 533	$222
P4	2.66GHz 512k 800	$251
P4	2.8GHz 512k 533	$302
P4	2.8GHz 512k 800	$320
P4	3.0GHz 512k 533	$462
P4	3.0GHz 512k 800	$480

Memory Step 4

SDRAM

Branded	PC133	512MB 64x64 133MHz	$59

DDR Memory

Corsair	PC2100	128MB 16X64 266MHz	$28
Corsair	PC2100	256MB 32X64 266MHz	$46
Corsair	PC2100	512MB 64X64 266MHz	$110
Corsair	PC2700	256MB 32X64 333MHz	$67
Corsair	PC2700	512MB 64X64 333MHz	$127
Corsair	PC3200	256MB 32X64 400MHz	$94
Corsair	PC3200	512MB 64X64 400MHz	$172
Kingston	PC3500	256MB Hyper X 433MHz	$134
Kingston	PC3500	512MB Hyper X 433MHz	$260

RDRAM

Samsung	PC800	128MB 64x16 800MHz	$54
Samsung	PC800	256MB 64X18 800MHz	$98
Samsung	PC800	512MB 128X16 800MHz	$128
Kingston	PC1066	512MB 128X16 1600MHz	$143

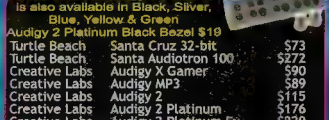
HardDrives Step 5

Maxtor	80GB	7200rpm	ATA 133	6Y080L0	$102
Maxtor	120GB	7200rpm	ATA 133	6Y120L0	$146
Maxtor	160GB	7200rpm	ATA 133	6Y160P0	$215
Maxtor	200GB	7200rpm	ATA 133	6Y200P0	$291
Maxtor	400GB	7200rpm	ATA 133	4A250J0	$559
Maxtor	250GB	7200rpm	ATA 133	6Y250P0	$395
Seagate	40GB	7200rpm	ATA 133	ST340016A	$80
Seagate	60GB	7200rpm	ATA 133	ST360015A	$91
Seagate	80GB	7200rpm	ATA 133	ST380011A	$104
Seagate	120GB	7200rpm	ATA 133	ST3120023A	$149
Seagate	80GB	7200rpm	SATA	ST380023AS	$155
Seagate	120GB	7200rpm	SATA	ST3120023AS	$195
Seagate	160GB	7200rpm	SATA	ST3160023AS	$295
WD	40GB	7200rpm	ATA100	WD400BB	$79
WD	80GB	7200rpm	ATA100	WD800JB	$109
WD	120GB	7200rpm	ATA100	WD1200JB	$159
WD	180GB	7200rpm	ATA100	WD1800JB	$287
WD	200GB	7200rpm	ATA100	WD2000JB	$288

Video Cards Step 6

EVGA	064A8NN74T2	GEFORCE4 MX440 8X w/ TV Out	$81
EVGA	128A8NN79T1	GEFORCE4 Ti4200 128MB 8X AGP	$176
EVGA	128A8NV84T3	GEFORCE4 Ti4600 128MB 8X AGP	$260
Gainward	ULTRA650BX	GEFORCE4 Ti4200 128MB DDR	$195
Gainward	VG4Ti4200-A	GEFORCE4 TV/DVI 64MB	$150
Gainward	ULTRA 750-8X XP	GEFORCE4 Ti4800 SE 128MB 8XAGP	$220
BFG	ASUM20064	GEFORCE4 Ti4200 64MB Asylum	$153
BFG	ASUM440AGP	GEFORCE4 MX440SE AGP Asylum	$75
BFG	ASUMT4200	GEFORCE4 Ti4200 128MB AGP Asylum	$180
BFG	ASUMT4600	GEFORCE4 Ti4600 128MB Asylum	$270
MSI	8894070	GEFORCE4 Ti4200 128MB DDR 8X VIVO	$157
MSI	8894060	GEFORCE4 Ti4200 128MB DDR 8X AGP	$172
MSI	MS8900	GEFORCE4 Ti4800 128MB DDR 8X AGP	$211
ATI	100435402	Radeon 9500 Pro 128MB TV-Out DVI	$204
ATI	100434003	Radeon 9700 Pro 128MB 8x TV Out	$359
ATI	100713001	Radeon AIW 9700 Pro 128MB DDR 8x	$405
ATI	100435002	Radeon 9800 Pro 128MB DDR 8x AGP	$419

Sound Cards Step 7



Creative Labs Audigy 2 Platinum is also available in Black, Silver, Blue, Yellow & Green

Audigy 2 Platinum Black Bezel $19

Turtle Beach	Santa Cruz 32-bit	$73
Turtle Beach	Santa Audiotron 100	$272
Creative Labs	Audigy X Gamer	$90
Creative Labs	Audigy MP3	$89
Creative Labs	Audigy 2	$115
Creative Labs	Audigy 2 Platinum	$176
Creative Labs	Audigy 2 Platinum Ex	$229

Creative Labs Sound Blaster Extigy USB External Sound Card With Remote.
$133

CDRW Drives Step 8

48x12x48	IDE	Pacific Digital U-30127	$70	$85
48x24x48	IDE	Samsung SW248FRAS	$55	$70
48x24x48	IDE	Plextor PXW4824TA/SW	$102	$117
48x24x48	IDE	Plextor PX320ASW	$145	$160
52x24x48	IDE	TDK AI-5200	$90	$105
52x24x52	IDE	Lite-On LTR5224	$59	$74
52x24x52	IDE	BenQ 5224P	$58	$73
52x24x52	IDE	Pacific Digital U-30146	$80	$95
52x24x52	IDE	Sony CRX220A1	$80	$95
52x24x52	IDE	GoldStar GCE8520	$61	$76
52x24x52	IDE	Teac CDW552	$82	$97
52x24x52	IDE	MSI MS8352	$58	$73
40x12x40	SCSI	Plextor PXW4012TS/SW	$205	$220

Other Drives Step 9

DVD Drives

			Beige	Color
16x/48x	IDE	Toshiba SDM1712A	$48	$63
16x/40x	IDE	Pacific Digital U-30115	$59	$74
16x/40x	IDE	Pioneer DVD Tray DVD119	$49	$64
16x/40x	IDE	BenQ DVD1648A	$50	$65
16x/48x	IDE	Samsung SM348 48x24x48/16x	$84	$99
10x/40x	SCSI	Pioneer DVD305S	$104	$119

CD-ROM Drives

52x	IDE	Lite-On LTN526	$30	$45
52x	IDE	Creative Labs BLASTER52X	$35	$50
56x	IDE	BenQ CD656A	$29	$44

CD-RW Drives

24x10x32	IDE	Sony DRU500AX	$389	$419
2.5x	IDE	PDC DVD+R/RW & CD-RW	$280	$310

Floppy Drives

Mitsumi	IDE	1.44MB D359M3	$13	$17
Sony	IDE	1.44MB MPF920	$13	$21

Removable Drives

USB2.0 Hard Drives

Buslink	60GB	7200rpm	UII-6072E	$170
Maxtor	80GB	5200rpm	V01J080	$198
Buslink	80GB	7200rpm	UII-8072E	$202
Buslink	100GB	7200rpm	UII-1007E	$232
Iomega	120GB	7200rpm	32394	$249
Maxtor	250GB	5400rpm	S01J250	$468

USB Removable Drives

Iomega	100MB Zip Ext USB Drive	31714	$76
Iomega	250MB Zip Ext USB Drive	31310	$112
Iomega	750MB Zip Ext USB Drive	32324	$146

Speakers

Klipsch

Klipsch	5.1 6pc	$399	
Klipsch	4.2 6pc	$299	
GMX D	5.1 5pc	$299	
Klipsch	2.1 3pc	$179	

Logitech

Z540	4.1 40W	$69	
Z640	5.1 51W	$73	
Z560	4.1 400W	$144	
Z680	5.1 480W	$288	

Creative Labs

Inspire5200	6pc 47W	$66	
Inspire6600	7pc 120W	$103	
Megaworks THX550	6pc500W	$263	

Monitors

CRT Monitors

Viewsonic	17"	Q71-6 17" 1280x1024 .23mm	$135
Viewsonic	17"	E70B8 17" 1280x1024 .24mm	$138
NEC	17"	FE791SB 1600x1200 .25mm	$194
Viewsonic	19"	Viewsonic GS790-2 1600x1200	$292
Samsung	19"	Samsung 19" 1920x1440 .20mm	$318
NEC	19"	Diamond Pro 930SB 1920x1440	$329

LCD Monitors

NEC	15"	LCD1560NXBK Black 1024x768	$338
Samsung	15"	152T Silver 1024x768	$414
Sony	15"	SDM-X52 Gray 1024x768	$403
Viewsonic	15"	VE155B Black 1024x768	$316
Samsung	17"	171SBlack 1280x1024 .26mm	$496
Viewsonic	17"	VE170 Beige 1280x1024	$553
Samsung	21.3"	210T Silver 1600x1200	$1625

Keyboard / Mouse

HDC KeyBoard & Mouse Combo Available in Black, Red, Silver, Blue, Yellow & Green
$15

Logitech Cordless Freedom
$89

Generic 104 Key Keyboard
$9

Mitsuko Black Scroll Mouse
$3

Microsoft Intellimouse Explorer
$49

Logitech MX700 RF Cordless Optical Mouse w/Base
$70

Power Supply

Enermax

Dual Fan P4 Ready		
300 Watt	EG301P-VE	$47
350 Watt	EG365P-VE	$55
430 Watt	EG465P-VE	$84
550 Watt	EG651P-VE	$155
Dual Wisper Fan P4 Ready		
350 Watt	EG365PVEFC	$59
350 Watt	365PVECA	$75
431 Watt	EG465PVEFC	$95
430 Watt	EG465VEFCA	$99
Redundent Hot Swappable P4 Ready		
400 Watt	ERM2400V	$329
300 Watt	EVR3006	$279

Case Mods

Sunon Fans
80mm $13
92mm $17
120mm $21

Window Kits

Rectangle $19
Round $25
Oval $25
L-Shaped $30

80 mm LED Fans
Available in Blue, Green, Red and Tri Colored
$13

We can install any window into a case you buy from us for $35!

Neons

Grills
80mm $18
92mm $20
120mm $24

Neon Accents From $24
Blue, Green, Red, Black

Neon Power Adapter $2
standard power connector

Sales Line: 800-400-3499 www.HardDrive.com

ThorTek Corp. 15355 Blackhawk Friendswood ,Texas 77546 Lifetime FREE technical support.

Prices & Specs subject to change without notice. Shipping charges are non refundable. Returns may be subject to restocking fee. Products are covered by manufacturers warranty only.
We accept all Government PO's. Local calls 281.557.8336 Fax 281.557.1426

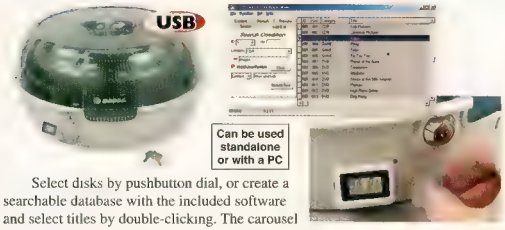
MPC0503

CYBERGUYS!®

Your LOW COST Computer Accessory & Supply Source!

Specializing in Hard-to-Find Computer Products

CD Carousel Finds Any Disk in 3½ Seconds!



Select disks by pushbutton dial, or create a searchable database with the included software and select titles by double-clicking. The carousel rotates and partially ejects disks for easy removal and replacement.

Call 800-892-1010 or online at cyberguys.com/mpc05 134 1360 $99.95

CD Destroyer Makes Disks Unreadable for Total Security

Ideal for security organizations, financial institutions, software developers, government, and all computer users.

With two solid steel knurled rollers, the CD Destroyer permanently destroys both the top and bottom surfaces of CDs, DVDs and other CD-size disks rendering the data-bearing surfaces unreadable. Your sensitive data cannot be read and you don't have to break disks. Operates on both top and bottom surfaces in one pass.

Call 800-892-1010 or online at cyberguys.com/mpc05 141 0830 $44.95

Groovy CD-Rs Look Just Like 45rpm Records

State-of-the-art Azo Blue technology provides superior write performance and broad read compatibility. Combine a cool retro look with the rugged quality and high-performance of today's advanced CD-R technology.

Call 800-892-1010 or online at cyberguys.com/mpc05 154 0595 $8.29

General Purpose 4.7GB DVD-R in Jewel Case

Step up to DVD-Rs with a capacity of 4.7GB! These disks are compatible with burners that use DVD-R media for general purpose v.2.0. If you have lots of big files to archive and store, these are a great solution. Compatible with data files and some video applications.

Call 800-892-1010 or online at cyberguys.com/mpc05 154 0610 $1.29

Zip Open CD/DVD Shrink Wrap with One Easy Stroke

Finally! An easy, simple way to open the factory seal and shrink wrap on CDs & DVDs. A quick swipe with our opener and you're listening to your CDs or watching your DVDs in no time!

Call 800-892-1010 or online at cyberguys.com/mpc05 113 0675 $1.59

Innovative Jewel Cases Hold 1 or 2 Disks on a Single Post

Disks don't touch each other when stored.

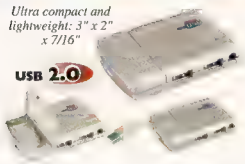
Unique post has tiny detents to hold 1 or 2 disks securely in a standard sized jewel case. A tiny space is maintained between the disks so they don't touch.

20 pack

Call 800-892-1010 or online at cyberguys.com/mpc05 134 0175 $4.99

Networking, Case Components, Media, USB Products, Tools, Drives, CPUs, Memory, Cables & More!

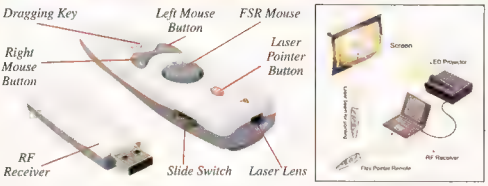
USB 2.0 Hub w/Built-In Cable



You remembered your USB hub but forgot the cable? Never again! This tiny Hi-Speed, 4-port hub has a built-in cable hidden away in a compartment.

Call 800-892-1010 or online at cyberguys.com/mpc05 104 0499 $19.95

Wireless RF Scrolling Remote with Laser Pointer



- Conforms to MS serial, PS/2 2-button mouse standard
- Ideal for PowerPoint presentations
- Battery lasts up to one year
- RF range of 33 feet

Call 800-892-1010 or online at cyberguys.com/mpc05 142 0130 $59.95

The Solution to Your Wiring Nightmares!

Get your cables organized!

113 0830
Small Kit: 1 - med., 4 - sml

- Lock and unlock again and again
- Open and close with just one hand
- Small holds approx. 1" of cables
- Medium holds approx. 2" of cables

Call 800-892-1010 or online at cyberguys.com/mpc05 113 0830 $4.99

Discreet "Keystroke-Catcher" Records Up to 16 Pages of Typed Text

1 - *Installs in seconds between keyboard and motherboard. No software to install.*

2 - *Captures EVERYTHING typed on your keyboard: E-mail, instant messaging, chat room activity, Web URL's, etc*

3 - *Records keystrokes to a plain text file viewable on most wordprocessors. Includes NetPatrol™ to identify URLs and a custom search function.*

Protect your children from the ever-present dangers on the internet and monitor unauthorized use of your computer with the KEYKatcher™. KEYKatcher™ installs between your keyboard and motherboard and records every keystroke made on the keyboard. Keystrokes are recorded to memory inside the KEYKatcher™ as a text file viewable with most any wordprocessor. Records approx. 16 typed pages of text.

Call 800-892-1010 or online at cyberguys.com/mpc05 132 0390 $49.95

Technician's Mini Hardware Pack

- hex head screw
- pan head screw
- mini jumpers
- brass standoff
- insulating washers
- pan head screw (self threading)
- hard drive screw (fine thread)
- taper head screw (fine thread)

10 of each item

Call 800-892-1010 or online at cyberguys.com/mpc05 115 1025 $2.49

1-800-892-1010
cyberguys.com

Sturdy LCD Monitor Shelf Saves Desk Space

Shelf is 20"(W) x 12 1/8"(D)

- Min. dimensions inside are 18"(W) x 14.25"(H)
- Max. inside height is 20.25"

Clamps to tables up to 1 7/8" thick

Works on corners and curves as well as straight edges

Our new monitor shelf attaches directly to your desk creating a sturdy self-contained shelf above your monitor. Molded ABS plastic shelf is very rigid, has metal support posts and hold as much as 26 lbs.

Call 800-892-1010 or online at cyberguys.com/mpc05 111 0370 $19.95

Make Your Cooling System Quieter & More Efficient

Cool metallic blue color

Chimney directs warm air up and away from the intake vent

Cool, fresh air from outside is ducted directly to the CPU

Make the airflow through your PC more efficient and your system quieter by routing cool air directly to your CPU from outside your case instead of just recirculating the warm air inside and a simple chimney vents hot air up and away from the intake.

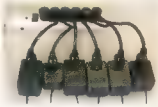
148 0670	To fit AMD & general 60mm coolers
148 0672	To fit General 80mm coolers
148 0675	To fit P4 (socket 478) & Sanyo 60mm
148 0678	To fit P4 (socket 478) & Sanyo 70mm

Call 800-892-1010 or online at cyberguys.com/mpc05 each style $14.95

Power Strip Liberator Plus!

New pass-through plug doubles your outlets

BEFORE *the Power Strip Liberator you could only use 2 outlets*



AFTER *the Power Strip Liberator you can use all 6 of your outlets*

An update of a Classic! Get full use of your power strips and UPS outlets with the new Liberator Plus! Simply plug your big, bulky, power adapters into a Liberator and then plug the Liberator into your power strip! No more blocked outlets! Also makes a great short extension cord when you just need a little bit more cable.

Call 800-892-1010 or online at cyberguys.com/mpc05 121 2510 $2.39

From mouseballs to professional rack products... Cyberguys! has thousands of items to choose from!

Split One 100Base-T Connection Into Two

- 2 adapters required
- Buy a pair for everyone's toolkit!

With our handy splitters, you won't need to pull cable for another connection… just plug one of these "Y" splitters into your existing LAN jack, connect a second "Y" splitter to your hub, and you've got another connection.

Call 800-892-1010 or online at cyberguys com/mpc05 202 5275 $10.95

Ultra Compact USB Flash Drive is Incredibly Tiny!

Win98/98SE/Me/ 2000/XP (download drivers 98/98SE)

Measures less than 1 3/4" x 3/4" x 1/8" and weighs just 3 grams!

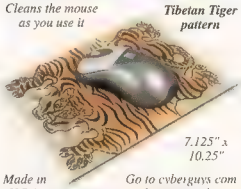
The Intelligent Stick™ may be the world's smallest USB Drive, yet it holds 64Mb of data. Just plug it into a USB port and you're ready to transfer data.

Call 800-892-1010 or online at cyberguys.com/mpc05 245 0670 $29.19

This Beautiful Rug Is Actually a Mousepad!

Cleans the mouse as you use it

Tibetan Tiger pattern



7.125" x 10.25"

Made in U.S.A.

Go to cyberguys com for more styles

Excellent for mechanical and optical mice

The MouseRug® combines traditional handmade rug patterns with the the Lextra® yarn-dyed nylon fiber coating process to create a beautiful little mousepad. MouseRugs® are made by scanning actual hand-woven rugs to look exactly like the original rug.

MouseRugs® are not screen-printed. Tiny yarn-dyed nylon or polyester fibers are dispensed through a metal screen with an electrical charge which orients the fibers in a vertical position and propels them into the design adhesive. The color cannot wear off.

Call 800-892-1010 or online at cyberguys.com/mpc05 107 0185 $18.49

Tiny USB Drives - Big Capacity in Small Packages

Other capacities available.

32MB

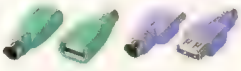
3 5/8" x 1" x 5/8"

- Plug 'N Play and hot swappable
- Write and password protected
- Win ME/2000/XP(*98/98SE req. drivers*), MacOS 8.6+, Linux 2.4+
- 32-256MB capacities available

Call 800-892-1010 or online at cyberguys.com/mpc05

32MB 245 0625 $25.49

PS/2 to USB Keyboard and Mouse Adapters



131 0840 *Mouse Adapter*

131 0845 *Keyboard Adapter*

Connect a USB keyboard or mouse to the PS/2 ports on your computer with these simple, compact adapters. *Because of PS/2 limitations, these are not interchangeable.*

Call 800-892-1010 or online at cyberguys com/mpc05 $1.99 each

We have 1000's of hard-to-find computer parts and accessories at low prices! Call 1-800-892-1010 or visit us online at cyberguys.com/mpc05 to order your free catalog. *Spend $100 and we'll throw in a cool Cyberguys T-shirt free. Use this free T-shirt keycode:

417-6501 FREE!*

when placing your order.

www.svc.com

cool products.
hot prices.

Your one stop shop for case mods, cooling and accessories!

gBOXBlue 533Mhz Pentium 4 barebone system w/AGP slot, TV Out, FireWire, USB 2.0, SPDIF optical in/out, $299.99

12" Neon Light Kit

$7.99 and up

A price breakthrough at SVC! Available in 12 colors, this dual light capable kit allows you to add another tube for just $3.49. At 29,000 Cd/m^2, these are the brightest lights available. Add sound activation for $3.99. Dual tube CCFL lighted fan grilles coming in April 2003.

Quad LED Fans

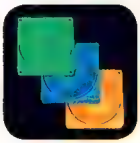
$2.49

These ball bearing fans feature four bright LEDs in a clear housing. SVC has them in 80mm, 92mm, and 120mm sizes. Even the expensive dual ball bearing 120mm fans are only $6.99. Check our website for color selections. Also available with mixed color LEDs.

X-Sonic Aluminum Case

$64.99

With a 350W CWT power supply, this case supports all the latest hardware. It features aluminum construction, front panel FireWire, USB 2.0, audio, clear window, pre-installed LED Fans, hemmed edges, EMI shielding, an extra large front panel vent, and more.



UV Sensitive Fans

$2.49

A UV reactive dye is present in these translucent ball bearing fans. The dye causes the fans to light up in bright and vivid neon blue, green, or red under a black light. Available in three colors as pictured. Also we have UV sensitive fans with UV LEDs coming soon.

Flexo Expandable Sleeving

$1.39 for 5 ft.

Expandable sleeving is a great way to organizing wires and cables while dressing up the inside of your computer. Visit svc.com for the lowest prices on sleeving, zip ties, and heat shrink tubing. Over 80 colors and sizes including chrome, carbon, and UV reactive.

Round Drive Cables

$0.99 and up

Over 100 different cables including UV sensitive, braided silver, braided copper, and translucent. High-end 100% shielded cables with ground wires for mission critical systems. Floppy cables from $0.99. ATA-133 cables from $1.85. 68-pin SCSI LVD/SE five connector, four device cable for $9.99.

Visit our website at http://www.svc.com to see hundreds of other cooling products, case mods, and other accessories to customize your computer.

Fans and Fan Accessories

Sunbeam Rheobus speed control	$19.99
UV Fan Adaptors (3 colors)	$2.99
Chrome fan	$3.99
3-pin to 3-pin extension	$0.99
4-pin Molex Power Y-Adapter	$0.50
Laser cut grilles (12 styles)	$1.49
Sunon	
80x25 50CFM Ball Bearing Fan	$8.99
80x25 39CFM Ball Bearing Fan	$7.49

Heatsinks/CPU Coolers

DDR Heatspreader and Ramsinks	$3.99
SVC GC68 80mm Socket A Cooler	$4.99
Arctic Silver III 3.0g Syringe	$4.99
Arctic Cooling, Switzerland (SVC exclusive)	
Super Silent Pro TC	$14.99
Super Silent 4TC	$14.99
TC-1 80mm Case Fan	$5.99
Thermaltake (Full line available)	
Aquarius II Liquid Cooling Kit	$124.99
Volcano 7+	$22.99
Volcano 9 with Coolmod	$23.99
Volcano 11	$34.99
G4 Cooler with Coolmod	$17.99
SLK900(U)	$49.99
SLK800(U)	$37.99
SLK800(A)	$32.99
SK-7	$19.99
AX 7	$17.99
Active DDR Memory Cooler	$9.99
Blue-Eye HDD Indicator Fan	$6.99
Zalman	
CNPS7000Cu	$49.99
CNPS7000AlCu	$39.99
ZM-NB32J North Bridge Heat Sink	$7.99
ZM-MFC1 6 Channel Speed Control	$38.99
Heatpipe Fanless VGA Cooler	$24.99

ATX Cases

Xaser III	$164.99
Chenming X-pider	$119.99
Clear Acrylic Case (unassembled)	$94.99
Turbo X-Dreamweaver 350W	$64.99
ATX mid tower case w/250W PS	$19.99

ATX Power Supplies

Vantec 520W Stealth P4	$114.99
Zalman 300W "Noiseless" P4	$69.99
Thermaltake 420W P4 Purepower	$52.99
Achieve 500W P4	$29.99

Miscellaneous

microlab 28WRMS 2.1Ch Speakers	$24.99
Color Tinted Thumb Screws	as low as $0.10
PS/2 Multimedia Keyboard	$6.99
Akasa PAX Mate	$10.99
MM Gear True Surround Sound Headphones	$59.99
Cat5 Cable Set (6 ft, straight & xover)	$0.99
Patented one touch storage for CD, DVD, MD, Floppy as seen in Staples and Brookstone	$4.99

SVC

Silicon Valley Compucycle, 876 The Alameda, San Jose, CA 95126
telephone > 408 292 SVC2 fax > 408 292 5295 web > http://www.svc.com

Deals

Sunon 80mm Case Fans	$1
Yellow IDE 18" 1-Device Round Cable	$1
Blue Floppy 10" 1-Device Round Cable	$1
4-Port USB Hub	$5
HighPoint 1520 SATA HD RAID Controller	$58
HighPoint RocketRAID100 IDE RAID Controller	$49

Case Mods and Water Cooling

3rd-Gen. Sound-Actvated Cold Cathode Lights	$18
Vantec Nexus Multi-Function Panel	$33
Blue/Green/Red/Tri-color/Quad-color/LED Fans from	$8
KoolanacePC2-C Water Cooling Case	$170
Innovatek Complete Water Cooling Kit	$250
Ahanix IceBerg Water Cooling Kit	$99

CD/DVD Burners

Asus DVR-104 2x1x6x DVD-R/RW, 8x4x24x CD-R/RW	$300
Pioneer DVR-A05 8x4x4x CDRW, 2x2x DVD-R/RW	$305
LG 48x24x48x16x COMBO DVD/CDRW Drive	$83
Toshiba 32x10x40x12x COMBO DVD/CDRW Drive	$86

Digital Video Accessories

IEEE1394 Firewire 4-Port PCI Controller Card	$20
Firewire 2-Port DV Capture PCMCIA Card	$49
Pinnacle DV500 DVD Digital Video Production	$570

PDA Accessories

Sony 1665/NR70V Emergancy Power Charger	$19
Dell Axim X5 USB Sync and Charge Cable	$22
Palm M130/515/i705 2-in-1 Car Charger & Wall Adapter	$27
Toshiba e310/e740 USB Sync and Charge Cable	$30

Monitors

Mitsubishi
- 22" DP2070SB-BK CRT Flat Screen Dual Input $679

Sony
- 15" SDM-S51R LCD Auto ImageSet Technology $348
- 17" SDM-X72/B LCD Dual Input W/Speakers $625

NEC
- 15" LCD1560V LCD Thin-Frame Design Analog Input $299
- 17" LCD1760NX LCD Ultra-Thin-Frame Dual Input $499

Viewsonic
- 18 " VX800 LCD XtremeView Performance W/Speakers $656
- 17" N1700W LCD TV HDTV Signals W/Speakers $872

VIDEO CARD

Asus
- V9180MAGIC GEFORCE4 MX440-8X 64MB $69
- V9280S/TVD GEFORCE4 Ti4200-8X 128MB $199
- PCI FM/TV Tuner Capture Card $64

ATI
- Radeon 9000 Pro 128MB $95
- All-In-Wonder Radeon 9700 Pro 128MB $390
- Radeon 9800 Pro 128MB $396

Gainward/Cardexpert
- Geforce FX-5200 Ultra 64MB $115
- Geforce FX-5600 Ultra 128MB $259

PNY
- QUADRO4 750XGL 128MB $335
- Verto Geforce FX 5800 128MB $396

Maxtrox
- Parhelia PH-A128R 128MB 3 Head $339

Memories

DDR
- OCZ PC2100 DDR266 256MB $36
- OCZ PC2700 DDR333 512MB $74
- OCZ PC3200 DDR400 EL Dual Channel 1024MB $299
- OCZ PC3200 DDR400 EL Dual Channel 512MB $149
- OCZ PC3700 DDR466 EL CAS2.5 256MB $85
- OCZ PC3700 DDR466 EL CAS2.5 512MB $171

RDRAM
- OCZ Rambus PC800 256MB $94
- OCZ Rambus PC800 512MB $247
- OCZ Rambus PC1066 256MB $109
- OCZ Rambus PC1066 512MB $298
- OCZ Rambus RIMM4200 232PIN 256MB $93

SDRAM
- SDRAM PC133 128MB $25
- SDRAM PC133 256MB $35

Flash Memory
- Memory Stick 64MB $35
- Memory Stick 128MB $55
- Smartmedia 64MB $23
- Smartmedia 128MB $33
- Compact Flash Samsung Chip 128MB $35
- Compact Flash Samsung Chip 256MB $60
- Compact Flash Samsung Chip 512MB $119
- USB PenDrive 128MB Memory $40
- USB PenDrive 256MB Memory $70
- 6-in-1USB Memory Card Reader $16
- Atech Flash Pro III 7-in-1 Card Reader $44

Hard Drives

Seagate
- 80GB 7200RPM Serial ATA ST380023AS $149
- 120GB 7200RPM Serial ATA ST3120023AS $190
- 160GB 7200RPM Serial ATA ST3160023AS $295

Maxtor
- 60GB 7200RPM Serial ATA 6Y060MO $134
- 160GB 7200RPM Serial ATA 6Y160MO $299
- 200GB 7200RPM Serial ATA 6Y200MO $376

IBM
- 40GB 7200RPM 120GXP ATA100 IDE HDD $79
- 120GB 7200RPM 180GXP Deskstar ATA100/ $136

Western Digital
- 40GB 7200RPM WD400BB $65
- 80GB 7200RPM 8MB Buffer WD800JB $93
- 120GB 7200RPM WD1200BB $118
- 120GB 7200RPM 8MB Cache WD1200JB $130

Controllers and Accessories
- Hard Drive Coolers $14
- HighPoint Rockethead100 IDE to SATA Adaptor $23
- 15pin to 4pin SATA HDD Male Power Cable $5

CPUs

INTEL
- Pentium 4 1.8GHz 512K Socket478 $148
- Pentium 4 2.4GHz 512K 533FSB Socket478 $164
- Pentium 4 2.6GHz 512K 533FSB Socket478 $239
- Pentium 4 3 0GHz 512K 533FSB Socket478 $574
- Pentium 4 XEON 2.4GHz 533FSB $259
- Pentium 4 XEON 2.8GHz 533FSB $474

AMD
- Athlon XP 2000+ $78
- Athlon XP 2400+ $126
- Athlon XP 2600+ 256K 333FSB $216
- Athlon XP 2500+ 512K 333FSB (Barton) $175
- Athlon XP 3000+ 512K 333FSB (Barton) $589
- Athlon MP 2200+ $135
- Athlon MP 2400+ $204
- Athlon MP 2600+ $275

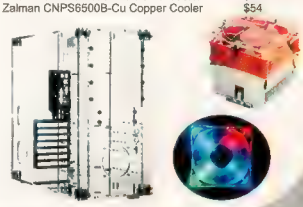
Motherboards

INTEL
- Asus P4G8X Deluxe Socket478 $205
- Asus P4PE Black Pearl Socket478 $149
- Asus P4SDX Socket478 $189
- Gigabyte GA-8INXP Socket478 $210
- Gigabyte GA-SINXP1394 Socket478 $186
- MSI 655 MAX-FISR/ 655 MAX-LS Socket478 $169/116
- MSI GNB MAX-FISR Socket478 $215

AMD
- Abit NF7/NF7-S Socket A $97/111
- Asus A7N8X Deluxe/A7N8X Socket A $133/115
- FIC AU11 Socket A $73
- MSI K7N2G-ILSR/ K7N2G-L Socket A $128/112
- Soltek SL-75MRN-L Socket A $112

Cases
- Antec LANboy Aluminum Case with PSU $85
- Chenming Color Aluminum Window Case $80
- All Clear Acrylic Mid-Tower ATX Case $150
- Thermaltake Xaser III Tower Case $155
- Kingwin KT-436WM Aluminum ATX Case $162
- LianLi PC6089 Aluminum ATX Case $175
- Laser Cut Fan Grills $5

Quiet Cooling
- PaxMate Acoustic Absorption Mat $19
- Vantec 420A Tri-Fan Quiet Power Supplies $99
- Vantec 4-Channel Fan Speed Controller $28
- Antec Sonata Quiet ATX Case $105
- Vantec AeroFlow TMD Fan CPU Cooler $29
- Zalman CNPS6500B-Cu Copper Cooler $54



B

CR51
- 933MHz VIA C3 EBGA processor
- VIA Apollo PLE133 Chipset
- Up to 1GB of SDRAM memory
- Integrated graphics
- AC'97 6 Channel Audio Onboard
- On-board 10/100 LAN
- 1 PCI card expansion slot
- 2 USB 1 1 ports
- 1 Available 3.5" Bay
- 1 Available 5.25" Bay
- Dimensions 292 x 200 x 186mm
- Keyboard and Mouse Optional
- 15" Sony LCD Monitor Optional

$164 Complete System with 128MB Memory & 20GB Hard Drive for $249

IC-VG61
- Intel 845GE Chipset
- Support Intel P4 478 (400/533MHz)
- Supports DDR333 PC2700 Memory
- AC'97 6 Channel Audio Onboard
- On-Board 10/100 LAN
- 1 PCI Card Expansion Slot
- 1 AGP 4X Expansion Slot
- 3x Firewire1394 Ports & 4x USB1 1 Ports
- 1x SPDIF Input Ports
- Aluminum Case
- Dimensions 294.5 x 135 x 260mm
- Keyboard and Mouse Optional
- 15" Sony LCD Monitor Optiona

$279 Complete System with P4 2.4GHz CPU, 512MB Memory & 40GB HD for $649

D

- Intel845GE Chipset Motherboard
- Intel Pentium4 2.4GHz 512K Cache 533FSB CPU
- 512MB DDR333 Memory
- 80GB 7200RPM Ultra ATA Hard Drive
- 48x24x48x16x CDRW/DVD Combo Drive
- 1.44MB FDD
- Intel Integrated Graphics
- 6 Channel Audio
- 10/100 Ethernet
- Keyboard and Mouse
- Mini-Tower Case with 380W Power Supply
- Add Microsoft Windows XP Home @ $98
- 1 Year Limited Warranty
- Monitor, Mouse & Keyboard Optional

$1099 upgrade to P4 2.8GHz $1291 upgrade to P4 3.06GHz $1549

X

- SIS655 Chipset Motherboard Supports Dual Channel Memory (Serial ATA / ATA133/ AGP8X/ 1394/ USB2.0 Support)
- Intel Pentium4 3 06GHz CPU/ 512MB DDR400 Memory
- 80GB 7200RPM Ultra ATA Hard Drive
- 16x DVD Drive
- 52x24x52x CDRW Drive
- 1.44MB FDD
- ATI Radeon 9700 Pro 128MB Video Card
- AC'97 6 Channel Audio
- 10/100 Ethernet
- Wireless Keyboard and Mouse (Same Color as Case)
- Color Aluminum Mid-Tower Case with 350W Power Supply
- Add Microsoft Windows XP Profesional @ $164
- 1 Year Limited Warranty

$1999 Atacom recommends OCZ EL Dual-Channel DDR for extreme Gaming PC systems

AM-COMPS.COM

Where Power, Performance & Quality Meet

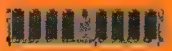
starting at

$259

NEMESIS

- AMD ATHLON 1.1 GHZ
- 256 MB DDR PC 2100
- 20 GB ULTRA ATA HARD DRIVE
- 56X CD ROM
- 56K MODEM
- 1/100 NETWORK ADAPTER

MEMORY CENTER



crucial 256ddr pc266	$79.48
kingston 512ddr pc266	$161.70
oem 256ddr pc333	$82.50

AMD PROCESSORS
Checkout our unbeatable prices on xp and mp processors. We have xp 2700+ in stock now.

ATI GRAPHICS
Is your current game not playing right on your computer? Upgrade your graphic card to an ATI Radeon card. we are now shipping radeon 9700 pro.

INTEL P4 PROCESSORS
Intel's most advanced and most powerful processors are now on sale here at am-comps. Available up to 3.06Ghz with 533Mhz FSB.

GAMING MONSTERS

Starting at $535.00

- SERIOUS POWER
- SERIOUS PERFORMANCE
- SERIOUS QUALITY
- AVAILABLE IN 8 COLORS
- FOR SERIOUS GAMERS ONLY

PROFESSIONAL SERIES

Starting at $670.00

- DUAL PROCESSORS
- PROFESSIONAL GRAPHICS
- DESIGNED FOR POWER
- BUILT ON STABILITY
- AVAILABLE IN SILVER, BLACK OR BEIGE

ENTRY LEVEL

Starting at $259.00

- HIGH PERFORMANCE
- LATEST TECHNOLOGY
- GREAT FOR HOME/OFFICE
- AVAILABLE IN BLACK OR BEIGE

888-905-9700

www.am-comps.com

am-comps.com 1 Abertson Ave, Albertson, NY 11507
PHONE: 516-626-7000 FAX: 516-626-7001
OUR OFFICE HOURS: 10:30 AM to 7:00 Eastern Standard Time

PRICE, SPECIFICATIONS, AND TERMS ARE SUBJECT TO CHANGE WITHOUT NOTICE SYSTEMS CARRY ONE YEAR PARTS AND LABOR WARRANTY

ABS® Ultimate X3

Antec PlusView1000AMG Case w/Acrylic Windows 400-Watt PS & Neon Light
New Asus P4G8X Intel E7205 Chipset Motherboard w/533FSB & USB 2.0
Kingston 512MB PC21 00 Dual-Channel DDR SDRAM Memory
120GB 7200RPM Ultra ATA100 Hard Drive w/8MB Cache
Pioneer 16X DVD Player and Mitsumi 1 44MB Floppy Drive
Lite-On 52X24X52 SMART-BURN® CD-ReWritable Drive
New NVIDIA GeForce FX Ultra 128MB 8X AGP Video Card w/TV-Out & DVI
Add SONY 19" 25mm 1600x1200 Monitor @$319
Creative Labs SoundBlaster Audigy Sound Card w/IEEE 1394
3Com PCI 10/100 Network Card and USR V 90 PCI 56K Modem
Logitech Access Keyboard & Optical Mouse
Microsoft Windows® XP Home Edition
Free Games: Microsoft Age of Empires II and Sierra Half-Life
Free 1 Year Onsite Service and 7/24 Tech Support

Intel® Pentium® 4 Processor with
HT Technology at 3.06GHz w/533MHz FSB **$2099**

ABS® Ultimate X7

CoolerMaster Case w/Acrylic Windows 400-Watt PS & Neon Light
New Asus P4G8X Intel E7205 Chipset Motherboard w/533FSB & USB 2.0
Kingston 1GB PC2100 Dual-Channel DDR SDRAM Memory
Two 120GB 7200RPM Ultra ATA 133 Hard Dr ves w/8MB Cache
Lite-On 16X DVD Player and Mitsumi 1.44MB F oppy Drive
NEC 48X24X48 CD-ReWritable Drive
New ATI Radeon 9800 Pro 128MB 8X AGP Video Card w/TV-Out & DVI
NEC 22" 25mm 1920x1440 Monitor
Creative Labs SoundBlaster Audigy 2 Sound Card w/IEEE 1394
Klipsch ProMedia 5.1 THX 6-Pieces Speaker System
Logitech Cordless Duo Keyboard and Mouse
Microsoft Windows® XP Home Edition
Free Games Microsoft Age of Empires II and Sierra Half-Life
Free 1 Year Onsite Service and 7/24 Tech Support

Intel® Pentium® 4 Processor with
HT Technology at 3.06GHz w/533MHz FSB **$3099**

ABS® PCs use genuine Microsoft® Windows®
www microsoft com/piracy/howtotel
ABS® recommends Microsoft® Windows® XP

ABS®

800.639.1470

Please use full URL to get latest prices and special promotions
www.abspc.com/mp05

Sales Hours: Mon-Fri 8:30AM-5:30PM PST Technical Support: Mon-Fri 8:30AM-5:30PM PST
1 Year Limited Parts Warranty Lifetime Labor Warranty Lifetime Toll-Free Tech Support 30 Days Money Back Guarantee

Price, specification and terms are subject to change without notice P cture shown with upgraded options ABS® s not responsible for errors in typography and/or photography 30 days money back guarantee does not include opened software parts or special orders merchandise Original sh pping and handl ng fee along with return shipp ng charge are non-refundable Products returned after 30 days or in a non refundable condition are subject to a restock ng fee Intel, Intel Inside, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsid aries in the Un ted States and other countries

MSI
MICRO-STAR INTERNATIONAL

Worldwide No.1 VGA Card Manufacturer

128MB DDR2

...by NVIDIA® GeForce™ FX 5800 Ultra
New ... Engine Provides Complex
Cinematic Qu... ...hnique

World's Most Powerful VGA ever...GA ever...

FX5800 Ultra

FX5600 Ultra-VTD8X

AGP 8X / Video-In / TV-Out / DVI-I

128MB DDR
Powered by NVIDIA® GeForce™ FX 5600 Ultra GPU
CineFX™ Engine Provides Complex Cinematic Quality Effects
Twin-BIOS Technology - Prevents VGA from BIOS Flash Failure
Hardware Monitoring - Your VGA Hardware Doctor
Dual VGA Output
Microsoft® DirectX® 9.0 and OpenGLR 1.4 Optimization and Support

FX5200 Ultra-VTD8X

AGP 8X / Video-In / TV-Out / DVI-I

128MB DDR
Powered by NVIDIA® GeForce™ FX 5200 Ultra GPU
CineFX™ Engine Provides Complex Cinematic Quality Effects
Twin-BIOS Technology - Prevents VGA from BIOS Flash Failure
Hardware Monitoring - Your VGA Hardware Doctor
Digital Vibrance Control™ 3.0 Controls Color Separation and Intensity
Dual VGA Output
Microsoft® DirectX® 9.0 and OpenGLR 1.4 Optimization and Support

Valuable Software Inside

"...MSI is the No. 1 VGA card maker in terms of unit shipments in Taiwan..."
-from "Goldman Sachs Global Equity Research - May 23, 2002

Product pictures are referred for all of MSI products. • MSI is a trademark of Micro-Star Int'l Co., Ltd. • Specifications are subject to change without ... All trademarks are registered trademarks of their respective owners. • Any configuration other than original product specifications is not guaranteed.

For more Information please refer to www.msicomputer.com

MSI
MICRO-STAR INTERNATIONAL
901 Canada Ct.
City of Industry, CA 91748
Tel: 626-913-0828
Fax: 626-913-0818

Beyond 3D

WWW.iBUYPOWER.COM

NIGHT DREAMER XP

- AMD Athlon XP Processor 2400+ with QuantiSpeed Architecture outperforms competitive 2.4GHz processors
- <BLACK> Aluminum 8-Bay Super Light Weight Tower Case w/420 Watt Power + See Through Window + Sound Activated Neon Light
- NVIDIA nFORCE-2 DDR400 8x AGP Main Board with USB 2.0
- 512MB Dual DDR400 PC-3200 Memory
- 80GB 7200RPM Ultra ATA-133 Hard Drive
- <BLACK> 16x DVD-ROM Drive & 52x24x52 CD-RW Drive
- <BLACK> 1.44MB Floppy Drive
- NEW!!! NVIDIA GeForce-FX 5800 Ultra 128MB Dual DDR 8x AGP Video powered by eVGA
- NVIDIA SoundStorm Audio with Dolby Digital 5.1 Encoding
- NVIDIA 10/100 Ethernet LAN
- Creative Labs Inspire 5.1 5200 Surround Sound Speakers
- <BLACK> 19" ViewSonic Perfect Flat E90FB .21H mm Monitor
- Microsoft® Optical IntelliMouse Explorer & <BLACK> Enhanced Multi-Media Keyboard
- Microsoft® Windows® XP Professional Edition
- Free Norton AntiVirus 2003 CD
- Free 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service
- Option! Viewsonic NextVision 5 High-Definition TV Tuner Box - Add $ 139

$ 1599

AMD Athlon XP Processor 2500+	$ 1629
AMD Athlon XP Processor 2700+	$ 1729
AMD Athlon XP Processor 2800+	$ 1849
AMD Athlon XP Processor 3000+	$ 1909

Value XP

- Intel® Pentium® 4 Processor 2.0GHZ
- DDR333 533Mhz FSB 4x AGP Main Board
- 512MB DDR333 PC2700 Memory
- 80GB 7200PM Ultra ATA-133 Hard Drive
- 16x DVD-ROM Drive
- 48x16x48 CD-RW Drive
- 64MB NVIDIA GeForce-4 MX440 4x AGP Video
- AC97 Stereo 3D Sound
- 480Watt Subwoofer Speakers
- 56K V.90 Fax/Modem & 10/100 LAN
- 17" .27mm Color Monitor
- Scrolling Internet Mouse & Keyboard
- Microsoft® Windows® XP Home Edition
- FREE Norton AntiVirus 2003 CD
- FREE 1-Year 24/7 ***i-Care*** Deluxe Technical Support + On-Site Service

$ 859

Intel® Pentium® 4 Processor 2.53 GHZ	$ 909
Intel® Pentium® 4 Processor 2.66 GHZ	$ 959
Intel® Pentium® 4 Processor 2.80 GHZ	$ 1109
Intel® Pentium® 4 Processor 3.06 GHZ	$ 1149

CORSAIR

Microsoft Windows XP Professional

CBG BEST BUY

GAMER POWER GUIDE

i-BUY Your Reliable Partner

TOLL FREE 888. 462. 3899

Note: Specification and terms are subject to change without notice. Pictures may differ from actual products. We are not responsible for errors in typography and photography. 30-day money back guarantee does not include opened software, parts, or special order merchandise.

Original shipping cost including the item with return shipping charge are non-refundable. Products returned after 30 days or in a non-saleable condition are subject to restocking fee. 3 year limited warranty includes 3 years labor and 1 year parts only.

Sales Hour: Mon-Fri 7:30AM-6:00PM, Sat 10AM-3PM PST
602 Monterey Pass Rd., Monterey Park CA 91754
Tel: (626) 281-8282 Fax: (626) 281-0787
All Prices effective on Apr. 25, 2002

Enhance your digital lifestyle.

Upgrade your PC today.

AMD PROCESSORS

ATHLON XP
Athlon XP Barton 3000+ $593
Athlon XP Barton 2800+ $378
Athlon XP Barton 2500+ $176
Athlon XP 2700+ $262
Athlon XP 2600+ $221
Athlon XP 2400+ $130
Athlon XP 2200+ $102
Athlon XP 2100+ $91
Athlon XP 2000+ $79
Athlon XP 1900+ $70
Athlon XP 1800+ $64
Athlon XP 1700+ $61

ATHLON MP
Athlon MP 2400+ $198
Athlon MP 2000+ $136

AMD DURON
Duron 1.3 GHz $38
Duron 1.2 GHz $33
Duron 1.1 GHz $28
Duron 950 MHz $28

INTEL PROCESSORS

PENTIUM 4-Retail Box
3.06 GHz 533FSB 512K $592
2.8 GHz 533FSB 512K $374
2.66 GHz 533FSB 512K $248
2.53 GHz 533FSB 512K $202
2.4B GHz 533FSB 512K $165
2.26 GHz 533FSB 512K $176
2.0 GHz 400FSB 512K $177
1.8A GHz 400FSB 512K $150

PENTIUM III FCPGA/2
P-III 1.4 GHz 512k $215
P-III 1.2 GHz 256k $113
P-III 1.13 GHz 256k $110

CELERON FCPGA2/478
Celeron 2.0GHz s478 $89
Celeron 1.8GHz s478 $73
Celeron 1.7GHz s478 $58

COOLING ACCESSORIES

COOLERMASTER
Socket A & 370
Jumbo Aluminum Fan $9
7k RPM Pure Cu $19
7k RPM Cu Pipe $35
Low noise Cu Pipe $35
Univ 80MM Case $9

ZALMAN
CNPS 3100+ SKT A $24
CNPS 6000-CU SKT A $32
CNPS 6500B-CU SKT 478 $41
CNPS 7000-CU SKT 478 $36

STORAGE

MAXTOR
20GB 100/7200/2MB $68
40GB 133/7200/2MB $75
60GB 133/7200/2MB $94
80GB 100/7200/2MB $99
120GB 100-5400-2MB $136

WESTERN DIGITAL
20GB 100/7200/2MB $68
40GB 100/7200/2MB $77
80GB 100/7200/2MB $100
120GB 100/7200/2MB $145
120GB 100/7200/8MB $161
180GB 100/7200/8MB $245

IBM
40GB 100/7200/2MB $84
60GB 100/7200/2MB $90
80GB 100/7200/2MB $102
120GB 100/7200 2MB $135

IOMEGA
250MB internal $69
250MB EXT USB $134
250MB EXT PAR $139

CONTROLLERS

TCW PCI ATA133 RAID $28

PROMISE
PCI ATA133 $35
PCI ATA133 RAID $92

DRIVE COOLING

PCI Slot System $8
3.5" SGL FAN HDD $12
5.25" DUAL FAN HDD $20
Coolermaster Alum HDD $30

USB

64MB USB Thumb Drive $40
128MB USB Thumb Drive $64
USB 2.0 5port PCI Card $24
USB 2.0 4port HUB $36
USB 2.0 EXT IDE Encl $76
USB 2.0 A-to-B cable 6ft $5

CAMERAS

LOGITECH
Quickcam Express $41
Quickcam Pro 4000 $87

CD-RW

48x24x48 Samsung w/DVD $92
32x10x40 Samsung w/DVD $76
48x24x48 Lite-On BLK $67
48x24x48 Lite-On $59
52x24x52 MSI Retail $55

DVD R/RW

PIONEER
DVR-A05 $300
DVD R Media $5

SOUND CARDS

CREATIVE LABS
Audigy MP3 5.1 $89
Audigy X-Gamer 5.1 $89
Audigy 2 $118
Audigy2 Platinum $176
Extigy $140

WIRELESS NETWORKING

LINKSYS
WIFI USB LAN Adapter $62
PCMCIA WIFI Adapter v2.5 $60
PCI W Fi Adapter $73
WIFI PCMCIA -> PCI ADAP $44
WIFI Access Point $109
Cable/DSL Router $115

NETWORKING

SWITCHES/HUBS
8port 10Mb $27
8port 10/100 Switch $50
16port 10/100 Switch $80

NETWORK ADAPTERS
TCW Realtek 10/100 $10
3Com 10/100 $32
Intel Pro 10/100 $33
Intel Pro/1000MT $57

CABLE/DSL ROUTERS
Linksys 4 Port Router $64
Belkin4 Port Router $61

CD ROMS

54X Mitsumi $23
52X Asus $25
52X Creative Labs $29
52X Lite-On $23

DVD ROMS

16X Samsung $45
16X Lite-On $42
16X Lite-On Black $47

MEMORY

DDR
256MB PC2100 $32
512MB PC2100 $60
256MB PC2100 REG $48
512MB PC2100 REG $82
1 GB PC2100 REG $230
256MB PC2700 $34
512MB PC2700 $64
256MB PC3200 $43
512MB PC3200 $81

SDRAM
64MB PC100 $21
128MB PC100 $28
256MB PC100 $50
64MB PC133 $20
128MB PC133 $29
256MB PC133 $39
512MB PC133 $78
256MB REG NON ECC $67
256MB REG ECC $73
512MB REG NON-ECC $85
512MB REG ECC $94

RAMBUS
128MB PC800 NON-ECC $42
256MB PC800 NON-ECC $82
128MB PC800 ECC $48
256MB PC800 ECC $92
512MB PC800 ECC $240
256MB PC1066 16bit $97
256MB PC1066 32bit $95
LIFETIME WARRANTY

VIDEO CARDS

TCW - NVIDIA
Geforce4 Ti4800 128MB 8X $337
GeForce4 Ti4200 128MB 8X $180

TCW - Powered by ATI
RADEON
9000 64mb DDR $73
9500 Pro 128mb DDR $204
9700 Pro 128mb DDR $373

MSI
TV Anywhere $57
GeForce 4 Ti 4200-TD8X64 $162

ATI - Built by ATI
AIW 8500Dv 64MB $191
AIW 9700 PRO 128MB $428

MATROX
M Ienmum G550 32MB $99
Parhelia 128MB OEM CALL

CASES

TCW
Midtower 350w Black $69
Enlight Mid 7237 USB $67
Full Tower 300w $77
Alum num w/Window $191
Blk Aluminum w/Window $191

ANTEC
PLUS660AMG 330W Mini $104
SX830 I 300W Mi-Tower $73
SX1040BII 400W Mi-Server $96
SLK3700AMB 350W $80

CASE ACCESSORIES
80MM fan guard $3
8pk Case thumbscrews $4
Blue Cold Cathode $19
Green Cold Cathode $19

ACCESSORIES

MICROSOFT
Intellimouse Optical $24
Natural Multimedia Keyboard $28
Office Keyboard $29
Wireless Desktop Combo $39

LOGITECH
Cordless Elite Duo Mouse/Keyboard $81
Cordless Navigator Duo Mouse/Keyboard $66
MX 500 Optical MSE $44
MX 700 Wireless Optical MSE $70

MOTHERBOARDS

PENTIUM4 / CELERON

ASUS
P4B533E i845E 533FSB DDR $157

INTEL
D845GEBV2L 845GE DDR $122
D845PEBT2L i845PE DDR $137

MSI
845PE MAX-L i845PE DDR $98
CNB MAX FISR DUAL DDR $263

BIOSTAR
U8668-G V.A P4M266A $64

ATHLON / DURON

EPOX
8RDA+ NVIDIA nForce2 DDR $108
8K9A2+ KT400 DDR $112

BIOSTAR
M7VIG KM266 DDR/SDR $59
M7VIT KT400 DDR $65
M7VIK KT400 DDR $90
M7NCG NVIDIA nForce2 DDR $112

MICROSTAR
MSI KT3V KT333 DDR $73
MSI KT4V-L KT400 DDR $83
MSI KT4 ULTRA SR $122
K7N2G-L NVIDIA nForce2 DDR $126
K7N2G-ILSR NVIDIA nForce2 DDR $144

ASUS
A7S333 S S DDR $74
A7V333R KT333 DDR $123
A7V8X KT400 DDR $135
A7N8X NFORCE2 DDR $155
A7M266D A760MPX $214
MICROSTAR DUAL SCKTA
K7D MASTER A760MPX $222

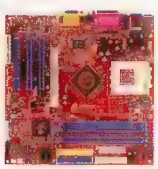
MONITORS

17"
AOC 7ELR 23hdp $139
AOC 7F 21hdp Flat $140
AOC 7E-BLK 23hdp $153
AOC 7F-SLK 23hdp $159

19"
AOC 9GLR 21 mdp $189
AOC 9KLR 21 mdp $223

LCD Displays
AOC 15" LM520 $321
AOC 17" LM720 $460
Cornea 15" CT1501 BLK $362
Cornea 17" MP704 BLK $442
Cornea 17" CT1700 $434
Cornea 18" CT1810 $550
All with Three Year Warranty!

$7.95
Shipping on all items!
*on all orders up to 150-lbs



More BANG for your BUCK!

Start your new system right with the AMD AthlonXP "Barton" CPU, featuring AMD's 333MHz FSB and 512K of full speed cache. Add on the Biostar M7NCG, boasting the revolutionary NVIDIA nForce2™ chipset to deliver awesome graphics and astounding performance. Next, throw in the Zalman CNPS3100+ CPU Cooling System for silent, high-efficiency cooling. Together, these make up a power user system that will not break the bank!

Call or visit TCWO.com today to get yours and start gaming!

TCWO.com

Visit us on the web at **www.tcwo.com** or Call Toll-Free: **800.941.2750**

Sales Hours : Mon-Fri 9AM-7PM EST Sales and Customer Service : 800.941.2750

Price, specification, and terms are subject to change without notice, Thompson's Computer Warehouse is not responsible for errors in typography and/or photography.

What

does your PC say about YOU?

The United States Flag: 15 hours of hand airbrushing, 19 layers of paints, crushed glass, and acrylic clearcoats. Baked to a finish as tough and enduring as the American spirit. A $699.00 addition, just one of the infinite possibilities of Falcon Northwest's custom PCs.

Falcon Northwest
Exotix
Express Yourself

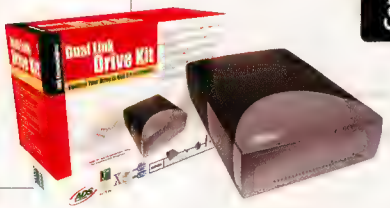
www.falcon-nw.com (888) FALCON-1

Dual Link Combination

Why settle for one, when you can have BOTH!

Connect : Create : Store

HI-SPEED CERTIFIED USB



Dual Link Drive Kit

- Converts drives to Either an External FireWire Drive or USB 2.0 Drive
- Provides (2) Two 400 Mbits/sec Firewire ports :
  - Connect one port to Host computer
  - Use second port for daisy chain to a second drive
- Provides (1) 480 Mbits/sec USB 2.0 port
- Micro-Slot security protection
- Support for Windows 98, 98 SE, Me, 2000, and XP (no 1394 support for Win 98)
- Super Fast & Reliable external storage

Features:

- Support for MAC OS 9.x and OS X : Firewire Interface
- Intech's SPEEDTOOLS UTILITIES for MAC OS 9.X and OS X
- Plug in the drive & it mounts automatically. Adding a drive is fast & easy!
- Hot Swappable - Real Plug & Play for your External Drives
- Includes Pop-Out front bezel to cover a hard drive, or remove for CD Drive installation
- Power Supply - Supplies both 5 Volt and 12 Volts to your drive.
- Silent Ball bearing fan to keep your drive cool and running smooth.
- Compatible with Anchor Pad and Kensington Micro-Slot Locks.
- Lighted rear power toggle switch
- Hard Drive activity light

Dual Link Cardbus

Upgrade to FireWire or USB 2.0

- Capture and Edit Digital Video
- Transfer data at 400 Mb/Sec for FireWire and 480 Mb/Sec for USB 2.0
- Connect to Hard Drives, Printers, Scanners, Cameras and more
- Connect to either a FireWire or USB 2.0 Network
- Provides 1 FireWire ports and 2 USB 2.0 ports

Dual Link PCI Card

Upgrade to FireWire or USB 2.0

- Capture and Edit Digital Video
- Transfer data at 400 Mb/Sec for FireWire and 480 Mb/Sec for USB 2.0
- Connect to Hard Drives, Printers, Scanners, Cameras and more
- Connect to either a FireWire or USB 2.0 Network
- Provides 2 FireWire ports and 3 USB 2.0 ports

PYRO A/V Link

Your Connection Between Digital and Analog Video

- Capture and convert any analog video source to High Quality DV video format
- Convert video without a PC - convert analog to DV or DV to Analog between recorders
- High Quality Analog to DV Video Converter
- **COMPONENT VIDEO INPUT**

Instant DVD for PC

Convert Your Videos Into DVD Movies

- USB Instant DVD gives you all the tools they need for capturing video in MPEG-2 format (DVD format) from ANY video source (Analog Camcorder VCR, DVD Player, etc.)
- Capture Audio/Video in REAL TIME at full DVD 704 x 480 resolution

ADS Tech

www.adstech.com

Available everywhere including: MacMall.com, Safe Harbor, Fry's, Comp USA, Circuit City, Bestbuy.com, FutureShop, Data Vision.com, JandR, London Drugs, Microcenter, DVD gear, ZoneS.com, Meriline.com, Macs4all.com and more!

* CD-RW drive required to create CD-RW discs. DVD recordable drive required to create DVD discs.

* DON'T STEAL MOVIES. ADS Technologies respects the rights of copyrightowners an ask you to do the same.

NewEgg.com -- Online Computer Parts, Peripherals, Components, and Accessories - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites History

Address http://www.newegg.com/ 4 Million + Unique Visitors Per Month

› RMA REQUEST › RMA STATUS | VIEW CART | ACCOUNT UPDATE | WISH LIST | ORDER STATUS

newegg.com

ALL PRODUCTS | COMPUTER HARDWARE | SOFTWARE | MAC STORE | CAMERA | NETWORK | ELECTRONICS & ACCESSORIES | CELLULAR PHONE | REFURBISHED ITEMS | ?HELP

SHOP BY CATEGORY | SHOP BY BRAND | TOP 10 SELLERS | NEW PRODUCTS | SPECIAL SALES | REBATE SALES

SEARCH: Description (Detail View) ADVANCED SEARCH

Best Value, Always!

Designer-Plus Scrolling Internet Easy+ Mouse

$0.01

Western Digital Special Edition 80GB 7200RPM Hard Drive

$99.00

Intel Pentium 4 2.4GHz 512K 533MHz Processor

$162.00

AMD Athlon XP 2500+ Barton 333FSB Processor

$177.00

ASUS A7N8X Deluxe Motherboard for AMD Athlon/XP/Duron Processors

$149.99

Kingston 512MB 32x64 PC2700 DDR RAM

$64.00

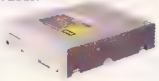
Crucial Micron 256MB 32x64 PC 2100 DDR RAM

$36.00

Shuttle SN41G2 Nvidia nForce2/MCP-T 2 DDRAM FSB266/333MHz for AMD SOCKET A Processors Barebone PC

$345.00

Lite On 52x24x52 CDRW LTR-52246S Retail



$54.00

Toshiba DVD-R/DVD-RW Recorder OEM

$177.00

Compaq iPaq Pocket PC H5455

$599.00

Olympus Digital Camera C-4000 ZOOM

$379.00

Dane-Elec 128MB CompactFlash Card

$33.00

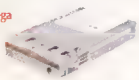
Samsung 128MB Smart Media Card OEM

$36.00

Olympus xD-Picture Card 128MB Retail

$61.99

Iomega Internal EIDE 250MB Zip Drive OEM



$71.00

Chieftec Blue Aluminum Workstation Tower w/Acrylic Window

$69.00

Sweet Home Alabama DVD WideScreen

$17.99

Blizzard WarCraft III Reign of Chaos - PC Game

$27.99

Creative Labs Sound Blaster Live! Dolby Digital 5 1

$33.00

ViewSonic P95F+B 19" CRT PerfectFlat Monitor

$259.00

Logitech Cordless Elite Duo Keyboard &

$32.00

Logitech Z640 5.1 Speakers

$67.00

Leadtek Winfast Deluxe TV2000XP TV/FM Multimedia Card

$54.99

ASUS V9280TD GeForce4 Ti4200 128MB AGP 8X TV-OUT & DVI

$147.99

Optodisc DVD-R 4.7G Media Disk. Box of 30

$51.00

Micro Car Mini Remote Controlled Car

$11.99

IPOWERUS FC-301 Fast Smart Charger

$51.00

Artec Flatbed Scanner 600x1200

$39.99

Hewlett Packard 3320 DeskJet Printer

$49.00

98% orders ship within 1 business day! Realtime inventory and pricing.

3,000+ of customer experiences for you to read and compare

Winner of the Bizrate.com Circle of Excellence Award

35,000+ of product reviews from buyers like you

9.79/10 Rating from 3,200+ Reviews on Resellerratings.com.

Bizrate.com Certified Merchant with 98% Satisfactory Rating from 25,000+ customers.

Copyright 2003 NewEgg.com All rights reserved All prices and specifications are subject to change without notice NewEgg.com is not responsible for typographical errors All typographical errors are subject to correction

P4 Titan series 1100 Family

- Dual Channel DDR 400 support
- 800MHz system bus support
- AGP 8X
- Intel® Application Accelerator Support
- Performance Acceleration Technology (PAT)
- USB2.0

Born to be Fast!

The New DNA Sequence of GIGABYTE P4 Titan series

Intel® 875P Chipset based motherboard

P4 Titan series

GA-8KNXP Ultra Intel® 875P Chipset

- Supports Pentium® 4 Processor with HT Technology
- Supports new generation 800MHz system bus
- Supports new generation Dual Channel DDR400 architecture
- AGP 8x with AGP Pro interface for excellent graphics performance
- GIGABYTE patented technology Dual Power System (DPS) design
- Integrated Adaptec SCSI Ultra 320 controller
- Integrated Serial ATA interface for RAID 0,1 function
- Integrated GigaRAID IDE RAID interface
- Integrated Intel® Gigabit LAN Ethernet controller
- Features Performance Acceleration Technology PAT

FSB 800 SCIC Serial ATA Intel® PRO ATA133 RAID USB 2.0

6 Channel Audio Dual BIOS Xpress Install EasyTune 4

Multi-language BIOS Q-Flash

P4 Titan™ series

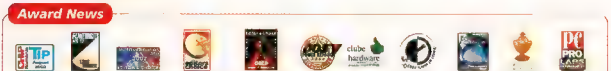
GA-SINXP1394 SiS655/963 Chipset

- Supports Pentium® 4 Processor with HT Technology
- GIGABYTE unique Dual Power System (DPS) design
- Supports new generation Dual Channel DDR400 architecture
- Supports AGP 8x interface for outstanding graphics performance
- Integrated SiS® Chrontel® Serial ATA & GigaRAID IDE RAID interface
- Integrated Intel® GigaLAN Ethernet controller
- Integrated IEEE 1394 rewire interface
- Integrated GIGABYTE patented DualBIOS™ technology

DPS Serial ATA Intel® PRO GigaLAN ATA 133 RAID USB 2.0

Dual BIOS 6 Channel Audio EasyTune 4 IEEE1394 Q-Flash™

Award News



Available Through: For other regions, please contact GIGABYTE

ASI www.asipartner.com | BASS www.bass.com | D&H www.dandh.com | Ingram Micro www.ingrammicro.com | Leadman www.leadman.com

LEADERTECH www.leadertech.com.tw | WINTER www.winter.com | MA-LABS www.malabs.com | SED www.sed.com.tw | SYNNEX www.synnex.com | Tech Data www.techdata.com

Taiwan Symbol of Excellence 1998-2001

6 years in a row

WWW.CYBERPOWERINC.COM

Copyright 2003, ATI® Technologies Inc. ATI® and RADEON™ 9700 PRO are registered trademarks of ATI® Technologies Inc.

4X 9600 GAMER PRO

$ 99

- Intel® 1845PE Chipset 533MHz FSB 8x AGP DDR333 MB
- 512MB PC2700 DDR DDR333 Memory
- 80GB 7200RPM ATA100 Hard Drive
- ATI® Radeon™ 9200 Pro 8X AGP 128MB DDR w/ TV Out & DVI
- 16X DVD-ROM & 52X24X52 CD-RW Drive
- Viewsonic 19" E95 .22MM SVGA Monitor
- AC97 3D Sound & 480Watt Subwoofer Speaker System
- 56K V.90 Fax Modem w/ Voice
- Mitsumi 1.44 MB Floppy Drive
- Internet Multimedia Keyboard & Internet Mouse
- **Turbo X-Dreamer Case 350Watt with See Through Windows and Sound Activated Neon Light.**
- 6 Cool Custom Colors to Choose From
- Microsoft® Windows® XP Home Edition
- Corel Wordperfect Office 2002
- Free First Year On Site Service
- Upgrade to Viewsonic Office Keyboard and Optical Mouse +$49

Intel® Pentium® 4 Processor 3.06Ghz	$ 1299	CSD01
Intel® Pentium® 4 Processor 2.8Ghz	$ 1259	CSD22
Intel® Pentium® 4 Processor 2.53Ghz	$ 1065	CSD23
Intel® Pentium® 4 Processor 2.4Ghz	$ 1029	CSD24
Intel® Pentium® 4 Processor 2.0Ghz	$ 1019	CSD25
Intel® Pentium® 4 Processor 1.8 Ghz	$ 995	CSD26

GAMER PERFORMANCE PRO

$ 1001

- VIA KT-400 400MHz DDR 8X AGP MB
- 512MB PC3200 400Mhz DDR Memory
- 80GB 7200RPM Ultra ATA100 Hard Drive
- ATI® Radeon™ 9600 Pro 8X AGP 128MB DDR w/ TV Out & DVI
- 16X DVD-ROM
- 48X16X48 CD-RW Drive
- 3D Wave Sound & 450 Watt Subwoofer System
- Viewsonic 19" E95 .22MM SVGA Monitor
- 56K Modem, Floppy Drive
- Internet Keyboard & Mouse
- **Aluminum** SX1030 Soho Server Tower Case 425Watt w/ MOD "See Through Windows" & Neon Light
- 6 Cool Custom Colors to Choose From
- Microsoft® Windows® XP Home Edition
- Free First Year On Site Service plus 24/7 Tech Support

AMD Athlon™ XP Processor 2700+	$ 1229	CXD501
AMD Athlon™ XP Processor 2500+	$ 1135	CXD502
AMD Athlon™ XP Processor 2400+	$ 1099	CXD503
AMD Athlon™ XP Processor 2200+	$ 1065	CXD504
AMD Athlon™ XP Processor 2100+	$ 1039	CXD505
AMD Athlon™ XP Processor 1800+	$ 1005	CXD506

XTREME GAMER PLATINUM PRO

$ 1685

- NVIDIA nForce-2 Motherboard with 8X AGP
- Corsair 1GB MB PC400 PC3200 DDR Memory
- 120GB 7200RPM Ultra ATA133 Hard Drive
- Nvidia Geforce-FX 5800 Ultra 128MB DDR Video Card w/ Tv out & DVI
- 16X DVD-ROM & 52X24X52CD-RW Drive
- Creative Lab Sound Blaster Audigy 2.6.1 w/ IEEE
- Creative Cambridge Desk Top Theater 5.1 Inspire 5200 5.1 Surround Sound System
- Viewsonic 19" E90F+SB .22MM SVGA Monitor
- 56K Modem & 1.44MB Floppy Drive
- Silver PS2 Internet Keyboard
- Microsoft® Optical intelli Explorer Mouse
- **Aluminum** SX1030 Soho Server Tower Case 425Watt w/ MOD "See Through Windows" & Neon Light
- 6 Cool Custom Colors to Choose From
- Microsoft® Windows® XP Home Edition
- Free First Year On Site Service plus 24/7 Tech Support

AMD Athlon™ XP Processor 3000+	$ 2019	CDS01
AMD Athlon™ XP Processor 2800+	$ 1995	CDS02
AMD Athlon™ XP Processor 2500+	$ 1785	CDS03
AMD Athlon™ XP Processor 2400+	$ 1749	CDS04
AMD Athlon™ XP Processor 2200+	$ 1715	CDS05
AMD Athlon™ XP Processor 2100+	$ 1689	CDS06
AMD Athlon™ XP Processor 1800+	$ 1685	CDS07

CyberPower Inc.

4802 Little John St. Baldwin Park, CA 91706 • Tel: (626)813-7730 • Fax: (626)813-3810 • Technical Support (877)876-4965
Hour:Mon-Fri 8:30A.M. ~ 6:00P.M. • Sat 9:30A.M. ~ 3:00P.M.

VISA MasterCard DISCOVER

Price subject to change without notice. *

ORDER TOLL FREE (800)707-0393

Can your game PC do 18700+ 3d mark out of box?

超频

OC System

WWW.OCSYSTEM.NET

1-877-785-3285

Introducing Gaming Power from *Beyond* the Future

3.6+ Gig. of *Hyper Threading* Hertz by

Overclocked Intel Pentium 4 Processor

5200MB/s Dual Channel DDR Memory Bandwidth

Resulting from lightening fast GeIL PC3500 DDR433 RAM Modules

Super Natural Video & Graphice Subsystem

Supercharged by OCS Enhanced Radeon 9700 Pro with 415MHz Core and 730MHz DDR RAM Speed

Personalized Chasis with High Tech Color

and Glossy Warned in exclusive OCS Liquid Diamond finish

and .... AIR COOLED!

NO WATER NEEDED!!

Over Clocked AMD Systems Available!

EXTREME POWER

overclocked system

Genghis Khan 18700+ 3D Mark*

- Overclocked P4 3.66GHz 640MHz FSB Hyper Threading
- Switech MCK4000-T Thermal Electric CPU Cooler with Thermaltake Smart Fan II
- Intel E7205 Chipset Dual Channel DDR RAID Motherboard 2 x 120GB Serial ATA HDD (RAID 0 or 1)
- Dual Channel GeIL 1GB PC3500 DDR466 ULD Platinum
- OCS Liquid Diamond Custom Color gTower Aluminum Case
- Vantec Stealth 520w Triple Fan Aluminum Power Supply
- OCS Enhanced ATI 9700 Pro Level III SE 128MB DDR 415MHz Core / 730MHz Memory
- Western Digital 200GB Ultra IDE HDD 8MB Cache
- Color 52x CDRW Drive
- Color Pioneer A05 DVD-RW Drive
- Sound Blaster Audigy 2 Platinum
- Logitech Z680 5.1 THX Speaker System
- 1000/100 Gigabit Network Adaptor
- Digital Doc5 Thermal Management System
- Logitech Elite Gaming Keyboard / MX300 Mouse
- Microsoft Windows XP Professional

$3999

Mighty Warlock 17500+ 3D Mark*

- Overclocked P4 3.20GHz 640MHz FSB
- Switech MCK4000 CPU Cooler with Thermaltake Smart Fan II
- Intel 845PE Chipset Motherboard
- GeIL 512MB DDR433 Ultra Platinum VV
- OCS Diamond Warp OC Proved Tower Case
- Thermaltake 420w Dual Fan Power Supply
- OCS Enhanced Radeon 9700 Pro Level II 128MB DDR 400MHz Core / 700MHz Memory
- 120GB Serial ATA HDD
- Color 52x CDRW / 16x DVD Drive
- Sound Blaster Audigy 2
- Altec Lansing XA3051 5.1 Speaker System
- Intel Pro100s Network Adaptor
- Fan Control Thermal Management System
- Logitech Elite Gaming Keyboard / MX300 Mouse
- Microsoft Windows XP Home

$1999

Mini Me Game Cube 13700+ 3D Mark*

- Overclocked P4 3.0GHz 600MHz FSB
- Shuttle SB51G XPC Aluminum Cube (Silver or Black) (Custom Color Option Available)
- 200watt PFC Power Supply
- Color 52x CDRW
- Intel 845GE Chipset Motherboard
- GeIL 512MB PC3200 DDR400
- OCS Enhanced Radeon 9500 Pro 128MB DDR 340MHz Core / 670Mhz Memory
- Western Digital 80GB Ultra IDE HDD 8MB Cache
- Color 48x16x DVD/CDRW Combo Drive
- Onboard 5.1 Sound
- Onboard 100/10 Network Adaptor
- Microsoft Multimedita Keyboard
- IntelliMouse Explorer 3.0
- Windows XP Home

$1355

*3D Mark 2001SE 1024 x 768 32bit 32bit 72hz +-2%. **Specifications and price are subject to change without notice.

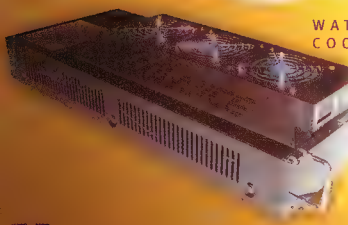
All Systems carries 1 year parts and labor warranty. www.OCSystem.net Division of Encore Innovation 14666 East Valley St. City of Industry CA 91746 1 877 785 3285

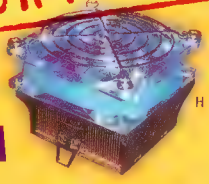
The nEXt generation of computer hardware has aRRived

CASE LIGHTING

Xoxide

GET PAID STORE CREDIT FOR EVERY 100 POSTS ON OUR FORUMS!





XOXIDE.COM

1.866.4.XOXIDE

MAXIMUM PC

12 issues PLUS 12 CD-Roms for only $29.95

A savings of 68% off the newsstand rate!

Subscribe to MaximumPC at www.maximumpc.com or by calling toll-free 1.800.274.3421.

Offer good in U.S. only. Cover price is $7.99. Canada: U.S. $40, includes GST. Foreign: U.S. $56. Prepaid in U.S. funds only. Please allow 6-8 weeks for delivery of first issue.

HERE COMES THE BEST KEPT SECRET FOR EXTREME GAMING

The Genetically Modified, Testosterone Charged, Grin Inducing

SOYO KT600 DRAGON Ultra

for the AMD AthlonXP platform

D: Ultra Fast DDR400
R: Advanced Serial ATA RAID
A: Crisp 6-Channel Audio
G: Extreme 8X AGP Graphics
O: Flexible Overclocking Options
N: 10/100 Mbps LAN, Internet Ready
Ultra: USB 2.0 / IEEE 1394 Firewire

Available At:

micro 408.941.8222
Outpost.com 877.OUTPOST
mwav.com Buy Smart, Buy Now! 800.234.3368
newegg.com 800.390.1119
compusa 877.472.2899

SOYO
www.soyo.com

Eliminate the Guesswork.

Games Freezing?
Random Lockups?
Mystery BSoDs?
Fatal Exception Errors?
Parity Errors?

QuickTech Professional gives you unmatched troubleshooting capabilities. QTP will put your system through the most vigorous diagnostics available, over 300 tests to pinpoint the most evasive system errors. It also captures detailed system information, capable of displaying up to 65 pages that can be viewed on screen, saved to file, or sent to a printer. QuickTech Pro supports PC 486 through Intel Pentium 4, AMD, and Cyrix compatible processors.

Quick. Simple. Accurate.

Features:

O/S Independent Self Boot
Customizable Burn-In
System Board Testing & Analysis
Critical RAM Testing
IDE/ATAPI Testing
LPT, COM, & USB Port Testing
Video, Modem, & Sound Card Testing
& Much More!

Examines ALL Types of Memory

EDO DRAM
SDRAM PC-66-133-150
ECC & Parity
DDR PC1600/2100/2700 [New]
RDRAM(RAMBus) PC600/800/1200 [New]

Kit Includes:

QuickTech Professional
QuickTech Personal
LPT & COM Port Loopbacks
Blue Professional Carrying Case

ULTRA-X, INC.
www.uxd.com

For more information:
1-888-722-3734
Tel: 1-909-946-8321 Fax: 1-909-946-7639 Email: sales@uxd.net

Earn up to $48,000 a year as a PC Repair Technician.*

TRAIN AT HOME FOR A GREAT NEW CAREER.

As a PC Repair Technician, you can earn great money in a growing field — there are expected to be 14% more job openings by 2010.** As the demand for skilled computer professionals rises, the salaries will likely rise as well. With Education Direct, you can train at home with learning materials shipped to your door and unlimited help from instructors by phone or e-mail.

For FAST & FREE information with no obligation, call
1-800-572-1685 ext. 3559
or visit **www.EduDirect-usa.com**
enter ID# AFYS53S.
To order by mail, please complete and return the coupon below.

* All salary information is based on the *Occupational Outlook Handbook*, a publication of the U.S. Department of Labor. Individual student earnings vary.
** Growth figures represent a ten year period ending 2010. Source: *National Industry-Occupation Employment Matrix*, a publication of the U.S. Bureau of Labor Statistics.

THOMSON
EDUCATION DIRECT

Dept. AFYS53S
925 Oak Street, Scranton, PA 18515

V326

Yes, I want free information on at-home career training in PC Repair. I understand there is no obligation.

Name _____ Age_____
Address _____
City/State/Zip _____
Phone ( ) _____
E-mail _____

#1 Koolance Volume Reseller

KOOLANCE INC.

LIQUID COOLING SYSTEMS

PC2-C PC2-601W PC2-901SW

Big Event

FREE CPU-200G

PC2-601BLW PC2-601BW

Koolance PC2-C, PC-601W, PC-901SW White Server Cases with Liquid Cooling System + *Free* CPU Cooler (CPU-200G) and Full Manufacturer Warranty.

(Case + Cooler)	
*PC2-C	$169.90
*PC-601W	$199.90
*PC-901SW	$264.90

*Blue and Black models are also available at higher prices. Availability is limited to quantity in stock.

You imagine, We deliver.

Toll Free 1-877-51-ORDER(67337)
INFOTECHNOW.com

DREAM PC
Obtain Set with ex

Monitor sold separately

AMD Athlon XP 2100+

"...the Exos was the best-performing water-cooling system we've ever tested." Maximum PC

$209.90
EXOS
External Liquid Cooling System

DARE TO COMPARE!

Best Performance at the Best Price!!
AMD Athlon
$729.90

Free Koolance T-Shirt with online purchases over $99.00 during the month of May, 2003

*Price and availability are subject to change without nobce

Looking to save on PC GAMES?

GoGamer.com

Savings ◄·····GREAT·····► Selection

Visit us @ www.gogamer.com

MEMORY

DESKTOP-LAPTOP-CAMERA-PRINTER

WE CAN BEAT ANY PRICE, ANYWHERE

CALL AROUND...THEN CALL US!!!

"NOBODY CAN BEAT US...NOBODY"

LIFETIME WARRANTY-NEVER A RE-STOCKING FEE

1-800-4-MEMORY

WWW.18004MEMORY.COM

ADVERTISE IN THE MAXIMUMPC MARKETPLACE AND WATCH YOUR SALES SKY ROCKET!

FOR MARKETPLACE SALES CONTACT SHARON KIERNAN (781) 416-2018

VELOCITY micro

"...care and craftmanship that the behemoth manufactures can't offer." - *MaximumPC*

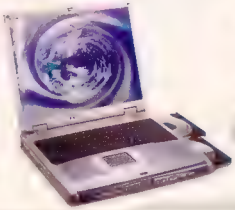
July '02

August '02

Don't Alienate yourself. You have a better option.

Velocity Micro hand-builds custom computer systems that are nearly as gorgeous as they are powerful. Individually tuned and tweaked for maximum performance, we prove that a computer is far more than the sum of it's parts. Priced for any budget, we cover the range from dedicated gaming rigs and A/V systems, to CAD workstations, supremely powerful notebooks, and even corporate computers. Try our online system wizard today to custom configure your perfect system, and Pump-Up your experience to the next level.

PUMP it UP!



1-800-303-7866

www.velocitymicro.com

© 2002 by Velocity Micro, Richmond, VA

Vazhar
by Full Sail Graduate
Brian Germain
FULL SAIL
Real World Education
SCHOOL OF:
Game Design
Computer Animation
Digital Media
Job placement assistance.
Accredited college, ACCSCT.
Financial aid available to those who qualify.
800.226.7625
www.fullsail.com
3300 University Blvd. • Winter Park, FL 32792
© 2002 Full Sail, Inc. All rights reserved. The terms Full Sail, Full Sail Real World Education, and the Full Sail logo are either registered service marks or service marks of Full Sail, Inc.

Tech Support Forums www.the-wizards.com/forum/
Computer Wizards
Shop Online or Call 1-(800)-431-3153
www.the-wizards.com

XP4
XP4-G
IWILL Mini Barebone for P4
Iwill
MAKE THINGS HAPPEN
http://www.iwill.net
Sleek
Compact
Simple
Affordable
Cool
Powerful
The most refined barebone based on Intel® chipset
Supports the latest Intel® Pentium®
Integrated Intel® Extreme Graphics
Supports Intel® Hyper-Threading
Home-theater surround audio
High-Speed USB 2.0 (2 x front
10/100 Ethernet
XP4
Intel® 845GV chipset
Supports DDR 266
PCI slot for expansion
XP4-G
Intel® 845GE chipset
Supports DDR 333/266
AGP slot for expansion
XP4 $179 MSRP
XP4-G $229 MSRP
ALSO TRY:
IWILL CR611 6-in-1
Memory Card Reader
GEEK TESTED & APPROVED IN MARCH 2003 ISSUE OF MAXIMUM PC
Available at Fry's and Outpost.com
Go online now! Outpost.com
IWILL and IWILL logo are trademarks of IWILL Corp. All other brand names and trademarks are the property of their respective owners. Product specifications and details may change without notice. Actual products may look different from the photo. Copyright IWILL Corporation 2002. All right reserved.
IWILL USA Corporation
Tel: (949) 753-5488 Fax: (949) 753-5486
http://www.iwillusa.com

CrazyPC.com
1-888-558-6005 9am-5pm Eastern
sales@crazypc.com

Visit CrazyPC.com for a wide selection of cooling, case modding, Gaming products and much more.

CPU Coolers
High Performance Aeroflow $ 26.95
SLK-800 $ 36.95 Socket A

Fan Controllers
A7 2 Fan, IO LCD $33.95
6 Port Baybus $29.95

Chip Coolers
GeForce4 Copper $17.95
BGA RAM Sinks $12.95

Fans
Crystal LED Fans Low as $6

HDD Coolers
Aluminum w/Dual Fan $14.95

Etched Windows $25.95

Bright PC LEDs $14.95

Fan Covers 80mm $10.95

Window Kits
Round $13
Oval $13
Square $17

Cold Cathodes
Light Kits $15.95

EL NEON Wire Kits $23.95

Xbags $43.95

Power Supplies
431 Watt $87.95
Vantec 470 Watt $124.95

Cables/Wires
IDE Round Cables $8.95 and lower!

CD-Library holds 150 discs $99

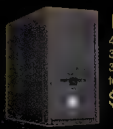
Mobile Racks
KF102 - Alum. 2 Fans $25.95

Cases

Biohazard Case - $185
Aluminum Mid-Tower, USB
Laser Cut Window, 4 Fans

Jupiter - $82.95
Aluminum Mid-Tower
Side Window, LCD, USB, Firewire

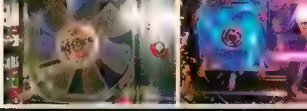
Lian-Li PC-61
Aluminum Mid-Tower,
USB 2.0, 4 fans
$129.95


Imperial
4x5.25",
3x3.5"ext,
3x3.5" Int,
temp fan control
$48.95

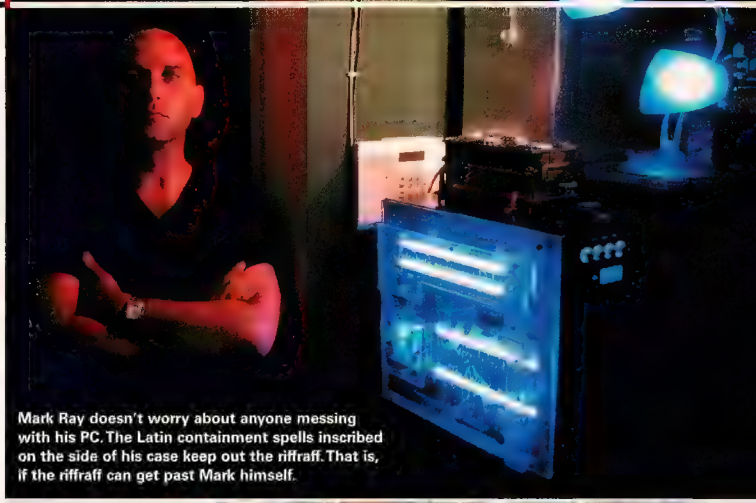
Copyright CrazyPC Ltd.
Silver Fire Dragon - $185
Aluminum Mid-Tower, USB
Laser Cut Window, 4 Fans

Acrylic Mid-Tower ATX
5 optional Fans
$99.95

Copyright 2003 CrazyPC. All rights reserved. Pricing and availability are subject to change.



THIS MONTH: Mark Ray's "Jackal-in-the-box"



Mark Ray doesn't worry about anyone messing with his PC. The Latin containment spells inscribed on the side of his case keep out the riffraff. That is, if the riffraff can get past Mark himself.

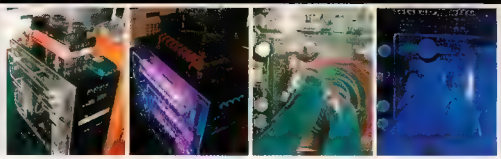
Latin containment spells inscribed on the inside of a case window with ultraviolet ink? Where do people come up with this stuff? Well, it turns out that Mark Ray got the idea for his sinister rig from the horror movie *13 Ghosts*. But the originality of his design is just half the story. The overall construction of the rig is first-rate, and the kernels of wisdom Mark picked up during the course of his project should prove useful to the uninitiated.

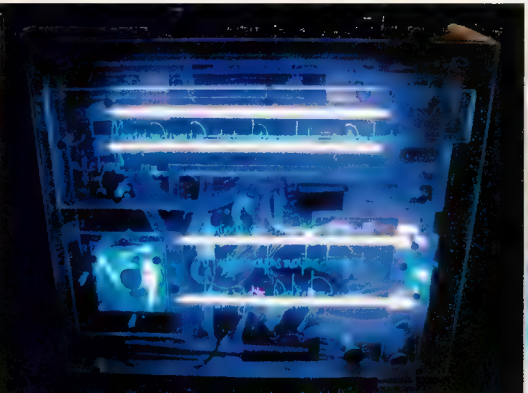
The sides of Mark's case were replaced with custom Lexan panels, with standoffs and cutouts providing added dimension. He firmly believes that a table saw is far superior to the "score and snap" method when cutting acrylic, and that plastic is easiest to work with when it's quarter-inch thick. To prevent scratching, leave the protective backing on the plastic until the cutting is done. And if scratching does occur, Mark swears by Novus Plastic Polish.

To create the rig's ethereal illumination, Mark used a combination of high-intensity blue LEDs and black cold-cathode lighting (the inscribed spells appear only when the black lights are flipped on). According to Mark, "high-intensity" LEDs can be 10 times as bright as their cheaper LED counterparts. Cold cathodes provide even greater illumination, but have their own issues: Any more than two sticks will require a larger power supply—100 watts more than what a system typically needs. And if you decide to go the UV route, bear in mind that acrylic tends to block about 70 percent of the UV lights' intensity.

Although equipped with a number of fans, Mark's rig relies heavily on custom water-cooling. And get this: The liquid running through it is windshield-wiper fluid! His reasoning: "It's cheap, it contains methyl alcohol for excellent heat transfer, prevents galvanic corrosion, and is a wicked shade of blue. The alcohol does evaporate after a month or so, but for $1 per gallon, who cares?"

When the cooling's at full throttle, Mark can push his AMD 1.4GHz to 1.7GHz. Although, as the Air Force master sergeant puts it, the fans make a sound like "a Harrier doing a 'touch-and-go'."





The rig is equipped with twin fan buses. One controls four 120mm high-flow fans that cool the interior, and...

The other is for the two 120mm fans atop "the stack" (Mark's pet-name for the radiator assembly that protrudes from the case's top).

If you have a suggestion for Rig of the Month, e-mail input@maximumpc.com and put

ahead of the game.

Introducing the latest innovation from Alienware® - the new face of high performance gaming. The unrivaled performance and reliability of Alienware® systems are now matched with truly unique styling. Custom-built with the highest quality components available and backed by award-winning customer support, Alienware® systems offer the best gaming experience money can buy. No wonder it's called the ultimate gaming machine.

"Alienware is on the front-line of an aesthetic movement that's sweeping the entire industry."

-Maximum PC

Custom Build Your Dream Machine at:

WWW.ALIENWARE.COM

Go Online or Call for the Latest Pricing and Promotions: (1-800-254-3692)

1-800-ALIENWARE

Alienware® recommends Microsoft® Windows® XP.

ALIENWARE®

THE ULTIMATE GAMING MACHINE™

"The mobile Alienware is the fastest notebook we've ever tested."
-Maximum PC

"An amazing amount of features into a suitably sci-fi-looking black box."
-PC World

AREA-51m™
MOBILEGAMING

Intel® Pentium® 4 Processor at 3.06GHz
533 FSB and 512KB Advanced Transfer Cache
Intel® 845MP+ ICH3M Chipset Motherboard
512MB PC-2100 DDR SDRAM
► NEW! 15.0" UltraXGA+ Enhanced TFT Active Matrix LCD
► NEW! ATI® Mobility RADEON™ 9000 PRO 128MB DDR with Dual-View Display Monitor and TV-out
40GB 5400RPM Ultra ATA100 Hard Drive

High-Performance Heatsink/Cooling with Arctic Silver III
Removable 3.5" Floppy Drive 1.44MB
Removable 24X/10X/24X CD-RW/8X DVD Combo Drive
Sound Blaster® PRO Compatible with Wavetable
5.1 3D Surround Sound with S/PDIF Digital Output
Front Panel Audio DJ CD Player
Allows CD Play While System is On or Off
One Type II PCMCIA Slot
Four USB 2.0 Ports and One IEEE 1394 Port
Infrared Wireless Fast IR Interface
► NEW! Integrated Wireless 802.11B Mini-PCI Card
10/100Mb Ethernet LAN and 56K Modem
Dimensions: (H) x (W) x (D) : 1.7" x 13" x 11.4"
Weight: 7.6lbs. without battery
Exclusive Metallic Majestic Blue Chassis
Exclusive 120-Watt A/C Adapter
Microsoft® Windows® XP Home Edition
1-Year Toll-Free 24/7 Technical Support with Aliencare Depot Service

AlienAdrenaline: Video Performance Optimizer
AlienAutopsy: Automated Technical Support

Personalized Owner's Manual
FREE Exclusive Alienware® T-Shirt
FREE Custom Alienware® Mouse Pad
Optimized & Configured for High-Performance

$2,999.00

Available In Many Custom Metallic Colors!

NAVIGATOR PRO
MEDIACENTER

Intel® Pentium® 4 Processor at 2.66GHz
533FSB and 512KB Advanced Transfer Cache
Intel® 845GE Chipset Motherboard
512MB PC-2700 DDR SDRAM
► NVIDIA® GeForce4™ Ti 4200 64MB DDR
► 120GB 7200RPM Ultra ATA100 Hard Drive

High-Performance Heatsink/Cooling System
5.1 Surround Sound with Optical Digital Output
Pioneer® DVR-A05 DVD-R/RW Writer
Black Navigator Case with 200-Watt PS
Four USB 2.0 Ports and Three IEEE 1394 Ports
10/100Mb Ethernet Adapter
Black Microsoft® Internet Keyboard
Black Microsoft® Intellimouse Explorer 3.0

Navigator Remote Control with Infrared Blaster
Navigator TV Tuner PCI Card
Navigator Universal Media Card Reader

Microsoft® Windows® XP Media Center Edition
1-Year Toll-Free 24/7 Technical Support with Aliencare Depot Service
Personalized Owner's Manual
FREE Exclusive Alienware® T-Shirt
FREE Custom Alienware® Mouse Pad
Optimized & Configured for High-Performance

$1,999.00

NAVIGATOR EXTREME
MEDIACENTER

Intel® Pentium® 4 Processor at 3.06GHz
533FSB and 512KB Advanced Transfer Cache
Intel® 845GE Chipset Motherboard
1024MB PC-2700 DDR SDRAM
► NVIDIA® GeForce4™ Ti 4600 128MB DDR
► 180GB 7200RPM Ultra ATA100 Hard Drive

High-Performance Heatsink/Cooling System
5.1 Surround Sound with Optical Digital Output
Pioneer® DVR-A05 DVD-R/RW Writer
Black Navigator Case with 200-Watt PS
Four USB 2.0 Ports and Three IEEE 1394 Ports
10/100Mb Ethernet Adapter
Black Microsoft® Internet Keyboard
Black Microsoft® Intellimouse Explorer 3.0

Navigator Remote Control with Infrared Blaster
Navigator TV Tuner PCI Card
Navigator Universal Media Card Reader

Microsoft® Windows® XP Media Center Edition
1-Year Toll-Free 24/7 Technical Support with Aliencare Depot Service
Personalized Owner's Manual
FREE Exclusive Alienware® T-Shirt
FREE Custom Alienware® Mouse Pad
Optimized & Configured for High-Performance

$2,699.00

intel inside pentium 4

► TAKE YOUR GAMING ANYWHERE

► LAN PARTY READY

► CONTROL LIVE TELEVISION

► LISTEN TO DIGITAL MUSIC

► EXPERIENCE UNMATCHED PERFORMANCE

► BUILT-IN WIRELESS

► ENJOY DVDs

► EDIT DIGITAL VIDEO

► RECORD-BREAKING BENCHMARKS

► BURN MUSIC, PHOTOS, AND VIDEOS

► VIEW YOUR FAVORITE PHOTOS

Custom Build Your Dream Machine at:
WWW.ALIENWARE.COM
Go Online or Call for the Latest Pricing and Promotions: (1-800-254-3692)
1-800-ALIENWARE

Alienware® recommends Microsoft® Windows® XP.

ALIENWARE
THE ULTIMATE GAMING MACHINE™

Prices, configurations, and availability may change without notice. Monitor and speakers sold separately. Taxes and shipping charges not shown. Alienware can not be held responsible for errors in photography or typography. On-site service may be provided via contracted third party, service not available in all areas. Technician will be dispatched if deemed necessary following telephone-based troubleshooting. For complete information on warranty, support, and on-site service, visit www.alienware.com. For hard drives, GB means 1 billion bytes and accessible capacity may vary depending on configuration. For CD-ROM, DVD-ROM, CD-RW, and DVD+RW/+R drive(s), maximum data transfer rates may vary and discs created with these drives may not be compatible with all drives and players. For modems and network cards/hardware, maximum achievable data transfer rates may vary. Actual case may vary in design. Award(s) and quote(s) listed do not pertain to a specific system or configuration. Intel, Intel Inside Logo, and Pentium are registered trademarks of Intel Corporation. All registered trademarks and trademarks are the property of their respective owners.

ahead of the game.

AREA-51™ DESKTOPGAMING

- Intel® Pentium® 4 Processor with HT Technology 3.0GHz
- NEW! 800 FSB and 512KB Advanced Transfer Cache
- NEW! Intel® i875 Chipset-Based Motherboard
- NEW! 1024MB Dual Channel PC-3200 DDR SDRAM
- NEW! 120GB 7200RPM Serial ATA150 Hard Drive 8MB Cache
- NEW! ATI® RADEON™ 9800 PRO 128MB DDR

High-Performance Heatsink/Cooling System
Black Floppy Drive 1.44MB
Sound Blaster® Audigy 2™ 6.1 Sound Card
Black 16X/48X DVD-ROM Drive
Black 52X/24X/52X CD-RW Drive

- NEW! Exclusive Alienware® Cyborg Green ATX Case 420-Watt PS

Cyborg Green Microsoft® Internet Keyboard
Cyborg Green Microsoft® Intellimouse Explorer 3.0
Gigabit Ethernet Adapter
Microsoft® Windows® XP Home Edition
1-Year Toll-Free 24/7 Technical Support
with Aliencare On-Site Home Service

- NEW! AlienIce: Video Cooling System

AlienAdrenaline: Video Performance Optimizer
AlienAutopsy: Automated Technical Support

Personalized Owner's Manual
FREE Exclusive Alienware® T-Shirt
FREE Custom Alienware® Mouse Pad
Optimized & Configured for High-Performance

$2,399.00

NOW SHIPPING WITH THE ATi RADEON™ 9800 PRO

Custom Build Your Dream Machine at:

WWW.ALIENWARE.COM

Go Online or Call for the Latest Pricing and Promotions: (1-800-254-3692)

1-800-ALIENWARE

Alienware® recommends Microsoft® Windows® XP.

ALIENWARE
THE ULTIMATE GAMING MACHINE™

Made with love by

Our goal is to preserve classic video game magazines so that they are not lost permanently.

People interested in helping out in any capacity, please visit us at retromags.com.

No profit is made from these scans, nor do we offer anything available from the publishers themselves.

If you come across anyone selling releases from this site, please do not support them and do let us know.

Thank you!